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A COMPENSATED DOLLAR

SUMMARY

A dollar constant in purchasing power is needed, 214. — The purchasing power of gold varies, 215. — The plan for a compensated dollar, 217. — The use of index numbers, 220. — No change in coinage, 222. — "Brassage" and redemption-bullion, 22. — Two prices of gold, m int-price and redemption-price, 227. — The plan briefly summarised, 228. — Illustration of its working if it had been adopted in 1897, 22.

On September 26, 1912, I made a brief report, for one of the sections of the International Congress of Chambers of Commerce, on the high cost of living. In that report I briefly described a proposal for rendering the gold standard more "stable" by virtually increasing the weight of the gold dollar so as to compensate for losses of purchasing power.

In the present paper I shall endeavor to explain the details of the plan. I shall assume that the reader is already aware of the following important facts: (1) that during the last fifteen years throughout the gold standard world, the general level of prices has been rising, or, in other words, the purchasing power of gold has been falling; (2) that it is at least likely that the same upward movement of prices will con-

tinue for many years to come;[1] (3) that this progressive shrinkage in the purchasing power of gold is a serious menace to the stability of business, affecting especially all long time investments, resulting in the substitution of speculative for sound business conditions, and disturbing the normal relations between those forms of income or prices which are relatively fixed, such as interest, rent, salaries, and wages, and those which are more promptly adjusted, such as the prices of most staple commodities.

The plan aims to make the purchasing power of the dollar constant. It would compensate for any loss of purchasing power of each grain of gold by increasing the number of grains which go to make a dollar.[2] In other words it aims to standardize the dollar as a unit of purchasing power. We have standardized the yard, the pound, the kilowatt, and every other important commercial unit except the most important of all, the dollar, the unit of purchasing power. We have now a gold dollar of constant weight, but of varying purchasing power. We need a dollar of constant purchasing power and varying weight.

The use of money originated to meet the need for a medium of exchange and not to supply a standard of value or, in other words, a standard of deferred payments. The reason for this was that when money began to be differentiated from other commodities there was a real need of a medium of exchange, but no great need of a standard of deferred payments.

[1] See "Will the Present Upward Trend of World Prices Continue?" by Irving Fisher, in The American Economic Review, September, 1912.

[2] The idea of increasing the weight of gold constituting the monetary unit had, I learn, previously been suggested by Woodrow Wilson, now President Elect of the United States, and by Mr. William C. Foster of Watertown, Mass. I also find that the plan here suggested is somewhat similar to a hint once thrown out by Professor Alfred Marshall, now Emeritus Professor at Cambridge University. (See Contemporary Review, March, 1887, "Remedies for Fluctuations in General Prices," p. 371, footnote.)

Contracts involving any considerable length of time were then unknown. Today, on the other hand, one of the most striking facts about business is the great network of contracts which binds each generation to the next.

The qualities, therefore, which led originally to the choice of any particular form of money, such as gold, were simply the qualities of a good medium of exchange — concentration of large value in small weight, portability, durability, divisibility, salability as merchandise, etc. The result is that we are now employing as a standard of deferred payments a metal originally selected wholly without reference to that function but exclusively because of its fitness to serve as a medium of exchange. It so happens that, as a standard of deferred payments, gold has not proved reliable. Anyone who will read the literature of the last decade of rising prices or the previous literature in the '80s and '90s of falling prices, will realize the shallowness of the notion that "gold is stable." I commend especially the reading of Sir David Barbour's recent book, *The Standard of Value*, which contains an analytical study both of the long period of falling prices, 1873–96, and of the present period of rising prices, beginning in 1897. As Sir David Barbour has so well shown, it would help greatly if, instead of using the phrase "a rise in general prices," we should ordinarily use the equivalent phrase, "a fall in the purchasing power of the dollar." Periodically in the history of the world gold has been discovered in great quantities or new metallurgical methods of obtaining it have been developed; while at other times the mines have become suddenly exhausted and the metal relatively scarce. Moreover, the value, *i. e.*, the purchasing power, of gold must naturally be

subject to innumerable other influences — such as the volume of bank notes, credit, velocity of circulation, and volume of trade, as well as myriads of antecedent causes.

As we have drifted into the use of a monetary yardstick unadapted to the needs of a modern community with contracts extending far into the future, we have seldom discussed or even considered the need of its stability. For this reason there have only been occasional and extremely academic discussions of a stable standard of value.

A number of impracticable proposals have been made. These have been criticised in the closing chapter of my book, *The Purchasing Power of Money*. The so-called multiple standard of value which would continue our present dollar as a medium of exchange, but create an ideal unit for time contracts, has attracted many, but it does not appeal to business men and their objections are well grounded. Not only would the multiple standard necessitate much laborious calculation in translating from the medium of exchange into the standard of deferred payments, and back again but, if, as has been suggested, the employment of a multiple standard were at first optional, the result would be that many business men whose prosperity depended on a narrow margin between their expenses and receipts would be injured rather than benefited by having one side of their accounts predominantly in the actual dollar and the other in the ideal unit. They are quite right in preferring to have both sides vary together in order that the margin between them shall vary comparatively little rather than to have one side vary less than the other and therefore the margin between them vary all the more.

The chief objection, however, to most methods for solving the problem of a stable standard of deferred

payments is that they involve a manipulation of the currency by Government officials. This would give a power so great to these officials as to be a constant danger to business. The power might be abused, and even if it were not, there would be a constant fear that it might. This fear of itself would probably be a greater injury to business than any stability which might be acquired under such systems. If any plan of stabilizing the dollar is ever actually adopted it must be one that works as automatically as the mint now works and is not subject to the judgment of any official.

The following is a plan which meets this condition. It is to virtually (tho not literally) increase the weight of the gold dollar and to vary that weight from time to time so as to maintain a constant purchasing power.

Today prices are nearly 50% above the level of 1896; that is, a dollar will now buy about two-thirds of what it would buy then. Yet the dollar has remained the same in weight — 25.8 grains. If the plan here proposed had been in operation since 1896, the weight of the gold dollar would virtually (but not literally) have increased until today it would have been heavy enough to possess 50% more purchasing power than it actually does possess, *i. e.*, as much as the dollar of 1896 possessed. For simplicity of illustration we may for the present assume that a gold dollar weighing 50% more than the existing dollar of 25.8 grains would have 50% more purchasing power; that, in other words, if the gold dollar of today weighed 38.7 grains, it would buy what the actual dollar of 25.8 grains bought in 1896. The level of prices would then be the same today (in terms of this supposed heavier dollar of 38.7 grains) as it was in 1896 (in terms of the actual dollar of 25.8 grains).

In order to have preserved this same level of prices throughout the period 1896–1912 it would only have been necessary, beginning in 1896, to have increased gradually the weight of the dollar. This gradual increase in the weight of the dollar would have taken the place of the increase in prices which has actually been experienced in the last fifteen years. Of course we cannot now return to the price level of fifteen years ago but we can, accepting the present level of prices, prevent any further rise by (virtually) putting more weight into the dollar. The increasing number of grains of bullion going to make a dollar would then compensate for the lessening purchasing power of each grain. The plan may therefore be called a plan for "a compensated dollar."

But how could such an increase in the dollar-weight be accomplished? How could the weight of the dollar be increased without literally having gold dollars of many different weights in circulation or suffering the annoyance of incessant recoinage? How also could we know the proper number of grains to be added to the dollar from time to time?

We can best answer these questions a step at a time. We may conveniently distinguish two different cases: (*a*) the hypothetical case in which gold is supposed to circulate only through gold certificates, and (*b*) the actual conditions now existing in the gold standard world.

It is interesting to note in passing that the first or supposititious case is at present nearly realized in the United States. There are a billion dollars of gold in the United States Treasury, the great mass of which does not belong to the Government but constitutes a trust fund for the banks and people holding gold certificates representing ownership thereto. Very little

gold actually circulates. For simplicity, however, we shall for the moment suppose that no gold coin at all were in circulation in the United States, but only gold certificates, and that all the gold in the Treasury were in bullion form. Suppose further, that it were the uniform practice when gold bullion was taken to the mint not to coin it but to issue only gold certificates for it. The situation would then be absolutely uncomplicated by gold coins. Gold would exist only as bullion, entering the Treasury whenever gold miners brought it there in exchange for gold certificates and coming out of the Treasury when holders of gold certificates exchanged them for bullion.

As there would be no coin dollar, the only gold dollar would be a *virtual* gold dollar consisting of each 25.8 grains of gold (9/10 fine) in the gold bars of bullion kept in the Treasury. A gold bar weighing 25,800 grains would contain 1000 *virtual* dollars. This virtual dollar may also be called the "redemption-bullion." Similarly, we may call the quantity of bullion accepted at the mint in exchange for each dollar of gold certificates, the "mint-bullion." At present both the "mint-bullion" and the "redemption-bullion" are the same, 25.8 grains.

In the language of commerce the two operations of issuing and redeeming certificates may be expressed by saying that the Government buys and sells gold (for certificates) at a fixed price. This fixed price, as it is at present, is easily computed. Since each gold dollar consists of 25.8 grains of gold 9/10 fine and since there are 480 grains in the ounce Troy, it requires $480 \div 25.8$, or 18.60 gold dollars to weigh one ounce. Consequently the price of gold (9/10 fine) must be $18.60 per ounce. It follows that, when gold bullion is taken to the mint we may, if we please, say that the

Government buys gold bullion and pays for it in gold certificates at a "mint-price" of $18.60 per ounce; and also that when, on the other hand, these certificates are presented for redemption in bullion the Government sells gold bullion, receiving in payment gold certificates at a "redemption-price" of $18.60 an ounce. It is evident that the proposal here made to raise the weight of a gold dollar above 25.8 grains (or, more specifically, to raise the weight of the redemption-bullion and the mint-bullion) is, otherwise expressed, a proposal to lower the price (*i. e.*, the redemption-price and the mint-price) of gold bullion below $18.60. At present the Government buys and sells at the same price; that is, both the mint-price and redemption-price are the same, $18.60 per ounce. One essential detail of the present proposal is to put a small margin (say 1%) between the two Government prices, the mint-price and the redemption-price; or, otherwise expressed, to put a slight margin between the mint-bullion and the redemption-bullion. The mint-price would be the lower of the two prices and therefore the mint-bullion, the higher of the two bullions. The margin of, say, 1% may be regarded as a "brassage" charge for minting.[1]

With this premise the proposal may be said to be a proposal merely to readjust, from time to time, the Government pair of prices for gold, keeping always, of course, the constant margin of 1% between them.

The important question remains: how can we know what changes to make from time to time in the weight of the redemption-bullion or "virtual dollar"? The answer is: By index numbers of prices, such as those

[1] The real purpose, however, of this brassage charge is to safeguard the Treasury against speculation in gold through a proviso that the pair of Government prices shall never be shifted up or down, at any one time, by more than the margin between them. How this proviso would prevent such speculation will be explained later.

of Sauerbeck, *The Economist*, the British Board of Trade, the United States Bureau of Labor, the Canadian Department of Labour, Bradstreet, or Gibson. Almost any one of these would afford a good guide and they all agree fairly well. Elsewhere[1] I have discussed in detail the relative merits of forty-four different forms of index numbers.

When once a system of index numbers is decided upon, their numerical calculation becomes a mere matter of clerical arithmetic, admitting of little or no discretion on the part of the compiler. If the official index number should at any time show the price level to deviate by, say, ½% above the base level from which the system started, it would become mandatory to correct the mint-bullion and redemption-bullion by increasing them ½% (*i. e.*, to decrease the bullion prices by ½%) and similarly for any other deviation from par[2] —subject, of course, to the restrictions above imposed. Thus if the price level deviated by 3% below the original par, then, assuming a brassage of 1% and the adjustment quarterly, the redemption-bullion could be corrected only to the extent of 1% in any one quarter of the year; but the full correction of 3% could be reached in three quarters unless the deviation were aggravated in the meantime; and in that case the correction would follow steadily on the heels of the deviation.

The plan then, without abandoning the gold standard, assimilates it to the multiple standard.

We have still to explain a few complications. In view of the fact that gold coin exists and is in circula-

[1] The Purchasing Power of Money, ch. x and Appendix to ch. x.

[2] The system, however, does not absolutely require that the correction to be applied to the weight of the redemption-bullion shall be exactly *equal* to the deviation from par of the index number. So long as the correction varies directly with the deviation it may be somewhat greater or somewhat less. See Appendix III.

tion, the actual proposal is complicated slightly by this fact. Yet the appearance on the scene of coined gold does not complicate the mechanism as greatly as might at first be supposed; for gold coin would then be, in effect, merely gold certificates printed on gold. Each gold dollar of 25.8 grains would confer on the holder exactly the same rights as those possessed by the holder of ordinary gold certificates printed on paper. Gold dollars would, in such a system, be mere tokens — like brass checks — entitling the holder to gold bullion.[1] That is, the actual literal gold dollar of 25.8 grains would give the holder a claim on gold bullion in the Treasury to a greater amount than 25.8 grains. The only real complication introduced by admitting gold coin into the proposed system consists in the fact that the "virtual dollar" or the redemption-bullion in which gold certificates and gold coin are redeemable can never be permitted to fall in weight lower than the weight of the gold dollar, 25.8 grains. Waiving this complication for the moment and assuming that the redemption-bullion or virtual dollar always exceeds in weight the coin dollar, it will be seen that the proposal involves no change whatever in the currency of any country. Some kind of coins and paper money would be passed from hand to hand and the ordinary man would be quite unaware of any change and as unconscious of the operation of the new system as he is now unconscious of the operation of the present system. The only persons who would notice the change would be the gold miners who bring gold to the mint (who would find that the price they could get would not always be $18.60 per ounce) and

[1] It should go without saying that all gold dollars, whether old or new, i. e., whether originally minted for 25.8 grains of bullion or minted at a later period for a larger amount of bullion, would be redeemable at any time in the same quantity of "redemption-bullion" without discrimination.

the jewelers and others who desire gold bullion (who would find that the Sub-Treasury would be furnishing them gold bars at not always $18.60 per ounce.[1]

If we suppose, for instance, that the redemption-bullion had been gradually increased since 1896 until today it were 50% heavier, or 38.7 grains, while the actual gold dollar were still 25.8 grains, the Government would now be redeeming on demand each gold dollar (of 25.8 grains) in 38.7 grains of gold bullion.

As to convertibility in the other direction, the Government mint would (had the system been adopted in 1896) now be prepared to give back a gold dollar for each 38.7 grains of bullion plus the coinage fee or "brassage" of, say, 1%. This brassage of 1% would then be .387 grains to be added to the 38.7, making 39.087 grains in all as the bullion required at the mint to procure a gold dollar. This would be the "mint-bullion."

Here we see clearly illustrated the two quanta of gold bullion, slightly differing from each other — 38.7 grains and 39.087 grains — the former, or "redemption-bullion," being the quantum which the Government would *give* for a gold dollar and the latter, or "mint-bullion," being the quantum it would *take* for a dollar. The total difference between the mint-bullion (39.087 grains) and the bullion in the gold dollar (25.8 grains) is 13.287 grains and would be retained by the Government as a part of its bullion reserve for redeeming gold coin. Of this 13.287 grains only .387 is brassage;

[1] Altho it is not necessary that the bullion in the gold dollar shall be equal to the bullion or "virtual" dollar in which it is redeemable, it is most emphatically essential that coin dollars shall be redeemable in bullion on demand. It is this provision for unlimited redemption on demand which, with the provision for the unlimited coinage (or purchase by the Government) of gold bullion, provides for the automatic retirement on the one hand or issue on the other of gold coin or certificates. Moreover it is the possibility of turning gold dollars or gold certificates into commercial bullion which is the essence of the gold standard. Without some sort of convertibility into bullion, we should not have a gold standard at all, but only fiat money.

the remainder, 12.9 grains, may, for want of a better term, be called "seigniorage." That is, the so-called seigniorage is the difference in weight between the literal dollar and the virtual dollar, — the bullion in which it could be redeemed. The plan might therefore be roughly described as one to restore the ancient custom of seigniorage,[1] the purpose of the seigniorage being to act as a sort of dam or tariff to impede the influx of gold at the mint. This is the one sluiceway by which it may enter the circulation and, unlike the mines, it is a sluiceway over which we have control. If, at any time, the redemption-bullion was 38.7 grains, the *redemption-price* would of course be two-thirds of the present price, *i. e.* $\frac{25.8}{38.7}$ of $18.60 or $12.40 per ounce, while the *mint-price* would be $\frac{25.8}{39.087}$ of $18.60 or $12.28 per ounce. Thus the Government would stand ready to sell gold at $12.40 and to buy it at $12.28, the difference, 12 cents per ounce, being the "brassage" or Government commission.[2]

[1] This "seigniorage" would, however, be a peculiar sort of seigniorage in that (1) it would be created not by reducing the weight of the coin, but by increasing the weight of bullion behind it; (2) it would not be fixed arbitrarily, but would be automatically adjusted from time to time (as later explained); and (3) it would not belong to the Government for its own profit, but would be part of a trust fund to be used for redemption purposes only.

[2] For convenience of reference we may here collect the technical terms employed and their definitions: —

(1) *Redemption-bullion* is the amount of gold bullion given by the Government in redeeming each dollar of gold coin (or gold certificates). This is the "*virtual dollar*."

(2) *Mint-bullion* is the amount of gold bullion required by the Government for each gold dollar of gold coins minted (or dollar of gold certificates issued).

(3) *Brassage* is the (slight) excess in weight of the mint-bullion over the redemption-bullion.

(4) *Seigniorage* is the excess in weight of the redemption-bullion over the gold dollar (in other words the excess in weight of the virtual over the literal dollar).

(5) *Redemption-price* (the reciprocal of redemption-bullion) is the amount of gold coin (or certificates) received by the Government for an ounce of gold bullion.

(6) *Mint-price* (the reciprocal of mint-bullion) is the amount of gold coin (or certificates) given by the Government for an ounce of gold bullion.

The two operations, selling (or redemption) and buying (or minting), would keep the value of the dollar not less than the redemption-bullion, or 38.7 grains, and not more than the mint-bullion, or 39.087. In other words, the official prices for selling and buying gold would fix its market price between the limits [1] of $12.40 and $12.28 per ounce.

[1] These two limits are like the two "gold points" in foreign exchange or the two limits used in the gold exchange standard. Thus in Austria the Austro-Hungarian bank stands ready to buy gold at K. 3,278 per kilo, but sells it, or rather claims on it in London (exchange on London) at a slightly higher price. The actual price of gold bullion in the open market might be any price within the two limits set by the Government just as the price of foreign exchange may now be any price between the "gold points." If at any time the market price falls between the two limits — *i. e.*, is greater than the mint-price and lower than the redemption-price — there will be no redemption and no minting. For no one would sell bullion to the Government for $12.28 an ounce when he could get a higher price in the market, nor buy bullion of the Government for $12.40 an ounce when he could get it cheaper in the market. Minting would only occur when the mint-price ruled the market, and redemption only when the redemption-price ruled the market. Practically it would usually be true, in all probability, that the mint-price would rule and that minting would go on, *i. e.*, that there would be much more minting than redemption. Nevertheless the redemption-price serves a very important purpose. It acts as an effective deterrent to coining the seigniorage and so inflating the currency. So long as the Government makes itself seriously responsible for redemption it could not afford to coin much of its reserve. To do so would tend to inflate the currency, raise the price of bullion and lead to buying it of the Government, or in other words to redeeming gold coin in bullion. If the Government wishes to coin its bullion it could do so up to the point where the redundant coin so produced flows back. The operation is thus self-limiting, just as in the Philippines, or in other countries having the gold exchange standard. The obligation of the Government to sell exchange on gold would set a limit to the extent to which it could inflate the currency. But, while this obligation of itself imposes prudence, sound financiering would naturally demand that, in adopting the system, we should incorporate the principle now employed as to the gold reserve behind the gold certificates, namely that no gold should be coined on Government account, but all gold bullion received at the mint in exchange for gold certificates or coin should be regarded just as it is at present, namely as a trust fund, not belonging to the Government but to the holders of the gold certificates (and coin) in circulation. It would, of course, now be possible, up to a certain point, for the Government to coin some of its trust fund of gold and still be able to redeem all gold certificates presented. But this would be Government banking. The present legal requirement which treats this gold as a trust fund on deposit and not belonging to the Government is a safe and sound policy and should be continued unchanged and unaffected by the increase in the weight of the redemption-bullion. In countries where no such fund already exists, the Government must, of course, acquire the necessary bullion reserve. Judging from experience with the gold exchange standard, however, the reserve needed would not be great. (See Conant "The Gold Exchange Standard in the Light of Experience," Economic Journal, June, 1909, pp. 190–200.) Of course the Government would not add any redemption responsibilities other than to redeem gold coin in bullion. Banks and other institutions having redemption obligations would still have them unchanged, their redemption being in coin and not in bullion. Thus the introduction of the adjustable seigniorage system would not make necessary any substantial changes in banking or currency laws other than to make the Government responsible for buying and selling gold bullion at the specified rates.

As already remarked, the "seigniorage" must never, of course, be negative. If, for instance, the mint-bullion were 12.9 grains, half as much bullion as is in the coin dollar, every dollar of 25.8 grains could be melted and the bullion so obtained taken to the mint and exchanged for two coin dollars, these melted and converted into four, and so on in an "endless chain." An obvious proviso in the proposed plan is therefore that the redemption-bullion (or, at the utmost, the mint-bullion) must never be lighter than the dollar itself. The present indications are that gold will continue to lose in purchasing power so that the redemption-bullion, in order to maintain the same purchasing power as the present dollar, would need in general to increase in weight in the future. If, however, it should ever happen that the redemption-bullion should shrink in weight again to 25.8 grains, then the proviso that it should never fall below this figure would come into operation. So long as it remained at 25.8 grains it would cease to be adjustable and to maintain a constant purchasing power. It would then have a constant weight, but varying purchasing power just as at present. It is probably better not to cross that bridge till we come to it; for, if my conclusions as to the future course of prices are correct, we probably never shall come to it. We need only provide, in advance, that when, if ever, we do come to it and the index number actually shrinks below par by a substantial amount (say 10%), then all gold coin is to be withdrawn from circulation and gold certificates substituted (or new gold coins of lighter weight). Of course any reduction in the weight of gold coin would produce no impairment of its value so long as it remained redeemable in bullion possessing the original purchasing power. A good instance of such

a reduction of weight with just such a purpose was that made in the peso when the gold exchange system was adopted in the Philippines.[1]

We are now ready to explain why two prices — the mint-price and the redemption-price — of gold are necessary. If the Government were to both buy and sell at the same price, every expected shift of that price would lead to speculation embarrassing to the Government. For instance, if the mint-price were today, say, $18 per ounce and if it were known or expected that tomorrow the price would be raised to $18.50, speculators would today buy of the Government gold bullion and sell it back tomorrow at an advance of fifty cents per ounce. This would be costly to the Government and might temporarily exhaust its gold reserve. The opposite speculation would accompany a drop in the official price. This would also be costly to the Government tho it would (temporarily) increase its gold reserve. If, however, the Government protects itself by charging a slightly higher price than it pays, it is evident that no such speculation would ensue if a provision be made that this pair of prices shall not be shifted by more than the margin between them.[2]

Let us suppose that the two prices differ by a "brassage" margin of 1%, and that the pair of prices are to be adjusted quarterly. This permits a maximum movement up or down of 4% per annum which, tho it may not be always sufficient to maintain absolutely constant the purchasing power of the monetary unit, will always tend in that direction.[3] It is evident that

[1] At first the attempt was made to institute the gold exchange standard without disturbing the weight of the peso, but in consequence of an unexpected rise in silver it was later decided to reduce the weight from 374 grains to 247 grains.

[2] See Appendix I.

[3] It would be possible and perhaps advisable also to provide against speculating for a *rise* in the price of bullion over a period covering *two* successive dates for adjusting the Government prices by specifying that even if the brassage margin were wide enough

under such a system gold would still be the ultimate means of redemption and it would still be coined freely (*i. e., ad libitum*). Its inflow and outflow into circulation through gold certificates would therefore still regulate the value of the dollar between adjustment dates, just as at present. But there would be a continued correction of the weight of the (virtual) dollar so as to restore its original purchasing power when altered. It would thus be a multiple standard realized in practice instead of merely an ideal money of account, like the tabular standard, separate from the actual money in our pockets.

The plan then in brief is:

(1) *To institute an official index number of prices, selecting some initial year, as the base of reference, the price level for that year being called 100%.*

(2) *The Government or Governments thereafter to readjust the official weight of the "redemption-bullion" or the "virtual dollar" (the quantum of bullion in which it will redeem the gold dollar) at regular intervals, say monthly, according to the findings of the index number. If in any month the index number deviates from par, the redemption-bullion is to be corrected in proportion to the deviation, provided however*

(a) *that no one shift in the weight of the redemption-bullion shall exceed the "brassage" (say 1%) nor such stated limits as will safeguard the Government from injurious speculations and*

(b) *that the redemption-bullion shall in no case be of less weight than the coin dollar.*

and the interval between adjustments short enough to admit of a rapid rise or fall of Government prices, nevertheless the rise should be limited to a rate less than the ordinary rate of interest on risky and short term investments so that there would be no possible object in withdrawing gold from the Treasury in order to hold it for a rise at future dates. If the rise was limited to 4% per annum or 1% per quarter this condition would be met. In fact a considerably larger rate might be permitted. Probably, in fact, any restriction at all would be quite unnecessary as such speculation in gold would be no more common than speculation in silver at present. See also Appendix I.

(3) *The Government to be responsible at all times for redeeming on demand gold coins (or certificates) in redemption-bullion and for minting bullion at the same rate (except for the "brassage" of, say, 1%); in other words, the Government to be always ready to sell gold bullion at the redemption-price and to buy it at the mint-price (the redemption-price less the "brassage").*

The following tables and diagram have been calculated by the method detailed in the Appendix, and show approximately what the index number would have been had the system here proposed been in actual use under the different conditions assumed. Three sets of calculations are made.

The first supposes the system to have been instituted in January, 1897, and employs 1896 as a base. This calculation assumes a brassage charge of 1% and a quarterly readjustment not to exceed that amount.

The second also starts in January, 1897, and employs the same base, but supposes a brassage of 3% with a maximum possible quarterly increase in the weight of the redemption-bullion of that amount (3%), but a maximum decrease of only 1%.[1]

The third assumes the system to have been inaugurated January, 1904, to be operated monthly instead of quarterly, to be based on the price level of December, 1903, as 100% and to have a brassage charge of 1½% with a maximum single increase in the weight of the redemption-bullion of that amount (1½%) and a maximum decrease of ½%.

I shall not take the space here to enter the results of all these calculations. The method is fully described in Appendix II. In brief it may be explained by an example taken from the midst of the third calculation.

[1] The results would be practically the same if the brassage were 1% but the frequency of change were once a month for an increase in weight and once a quarter for a decrease; but the calculations involved would have been much more laborious.

For January, 1910, the index number of prices was, as a matter of history, 18.8% higher than that of December, 1903 (according to the tables of the Bureau of Labor). In other words, if we call the price level of December, 1903, 100%, that of January, 1910, was 118.8%. If, however, the system here proposed had been in operation, the index number January, 1910, would have been 100.4, or only .4% above par. This .4% excess above par, therefore, would have then served as a signal to add .4% to the weight of the gold dollar, raising it from 30 grains, the amount at which it would have stood in December, 1909, to 30.12 grains. This change would have been made in January, 1910. The result would be that in February, 1910 (assuming that the effect of this increase in the weight of the dollar would be fully felt within the month), the price level would be .4% below what it otherwise would have been. The historical fact, however, was that the price level rose from January to February by .1%. Therefore this tendency to rise would have been blended with the decreasing effect of the increase in the weight of the dollar so that the final result would be the net effect of the two — a fall of .3% making an index number of 100.1; in other words (100.4 − .4 + .1 = 100.1). The same principles apply, of course, to a movement in the opposite direction. The results of the third calculation show a remarkable maintenance of parity. In actual practice it is reasonable to suppose that the approximation to par would be even more close, for three reasons: —

(1) If the plan were ever to be in actual use the index numbers used would be an average of the figures for several countries and would therefore be less subject to spasmodic fluctuations than those for one country (especially when that country is the United States).

It is always noticeable that the fluctuations of the price level are the less the greater the range of markets covered.

(2) The period here selected for illustration (1896–1911) was one of unusual variability of prices.

(3) If the proposed system were in actual use, some of the forces which have been hitherto responsible for the larger fluctuations would be non-existent. These large fluctuations have usually been incident to credit convulsions which were themselves due to upward price movements previously accumulated. An upward price movement when once started inflames itself, so to speak, until arrested by a crisis, after which there is a sharp reaction. Under the system here proposed there would be no opportunity for such progressive inflation and subsequent collapse; for each incipient movement is nipped in the very bud. Consequently under the proposed system the index number would probably seldom deviate from par by more than 1%.

The only opposing consideration is that the effect of correcting the redemption-bullion might not be fully felt within a month. There is reason to believe that it would be mostly felt within that time, but even if not and if the effect were spread over several months and blended with the other effects in that time, it could be shown by similar calculations that a close approach to parity would be maintained.

The following condensed table made from the first of the three calculations (by the method fully detailed in Appendix II) shows approximately what the index number would have been since 1896 if the proposed system had been adopted January 1, 1897, as contrasted with what it has actually been. It also shows what the weight of the bullion dollar would have been compared with what it has actually been (25.8 grains).

		The Index No.		The Virtual Dollar (in grains)	
		As it was	As it would have been	As it was	As it would have been
1896		100.0	100.0	25.8	25.8
1897	January	98.5	97.5	"	25.8
	April	96.2	95.2	"	25.8
	July	98.5	97.5	"	25.8
	October	104.0	103.0	"	26.1
1898	January	105.1	103.1	"	26.3
	April	108.4	105.3	"	26.6
	July	100.7	97.2	"	26.3
	October	98.5	96.0	"	26.1
1899	January	104.0	102.5	"	26.3
1900	January	123.2	115.8	"	27.3
1901	January	119.8	109.0	"	28.4
1902	January	122.0	106.9	"	29.7
1903	January	128.2	107.9	"	31.0
1904	January	125.2	101.5	"	32.3
1905	January	126.1	102.0	"	32.3
1906	January	133.6	104.6	"	33.5
1907	January	141.5	106.4	"	34.8
1908	January	139.0	100.7	"	36.4
1909	January	137.2	101.6	"	35.6
1910	January	146.8	104.5	"	36.9
1911	January	142.6	98.5	"	37.4

According to these figures, whereas in January, 1911, prices were 42.6% higher than in 1896, they would have been under the proposed system 1.5% lower. The weight of the bullion dollar would have been 37.4 grains instead of 25.8. It would have begun to increase in October, 1897, which is the first time the price level rose above that of 1896. After October, instead of having a dollar of constant weight but diminishing purchasing power, we would have had a virtual dollar of increasing weight but fairly constant purchasing

power. It is true that during the years 1899–1900, when an unprecedented rise of prices occurred, the system proposed would only have mitigated the rise. But its inadequacy at that time was due to the narrow limitations we have imposed, viz., a margin of possible change in the weight of the virtual dollar of only 1% and a frequency of change of only once a quarter. But if we allow a larger latitude, as in the second calculation, the index number under the proposed system works out still closer to par. The results of this second calculation are given in the diagram attached.

A still closer approach to par is found in the third calculation with its monthly readjustments. The condensed table on page 234 shows the contrast between the three calculations.

In summary it may be said that the plan may be called,—

With respect to its purpose:

A plan to assimilate the gold standard to the multiple standard;

i. e., to convert the *gold* standard into a true gold *standard*,

i. e., to make a stable dollar.

i. e., to standardize the dollar as a unit of purchasing power.

i. e., to change from a gold dollar of constant weight and varying purchasing power to a gold dollar of constant purchasing power and varying weight.

With respect to the method:

A plan to make a compensated dollar;

i. e., to (virtually) increase the weight of the gold dollar to compensate for the depreciation of gold.

THE INDEX NUMBER

		As it was		As it would have been		
		1896 base	Dec., 1903 base	Brassage 1%. Adjustments quarterly	Brassage 3%. Adjustments quarterly. Upward shift of redemption price limited to 1% quarterly	Brassage 1¼% Adjustments monthly. Upward shift of redemption price limited to ¼% per month
1896		100.0	....	100.0	100.0	....
1903	December	....	100.0	....	....	100.0
1904	January ..	125.2	101.3	101.5	100.5	99.8
	February .	....	102.4	....	....	100.9
	March ...	....	102.6	....	....	100.2
	April	126.1	102.1	101.2	100.7	99.5
	May	....	101.3	....	....	99.3
	June	....	101.1	....	....	99.5
	July	123.9	100.3	98.4	98.2	98.8
	August ..	....	100.3	....	....	98.8
	September	....	100.3	....	....	98.8
	October ..	123.7	100.1	99.2	99.0	98.6
	November	....	100.9	....	....	99.4
	December	....	101.6	....	....	100.1
1905	January ..	126.1	102.1	102.0	102.0	100.4
	April	126.8	102.6	101.5	100.5	99.7
	July	126.4	102.3	100.2	99.7	100.2
	October ..	130.0	105.3	102.9	102.9	100.8
1906	January ..	133.6	108.1	104.6	102.7	100.8
	April	133.8	108.3	103.8	100.2	99.9
	July	135.1	109.3	103.7	100.9	100.4
	October ..	136.6	110.6	103.8	101.1	100.7
1907	January ..	141.5	114.5	106.4	103.6	102.0
	July	144.1	116.7	106.2	100.9	100.2
1908	January ..	139.0	112.5	100.7	96.0	96.9
	July	134.6	109.0	97.7	94.7	96.7
1909	January ..	137.2	111.0	101.6	98.6	100.3
1910	January ..	146.8	118.8	104.5	102.9	100.4
1911	January ..	142.6	115.4	98.5	98.5	98.9

i. e., to change the status of gold coins to that of silver coins, — tokens, or mere "brass checks," so to speak, entitling the holder to a varying quantity of gold bullion which would be the virtual dollar.

i. e., to restore the ancient custom of seigniorage, but adjusted according to index numbers.

i. e., to lower the mint-price of gold to keep pace with its actual depreciation.

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THE ORGANIZATION OF THE BOOT AND SHOE INDUSTRY IN MASSACHUSETTS BEFORE 1875

SUMMARY

The significance and interest of this investigation, 236. — Scanty supply of materials, and difficulties in their collection, 237. — Stages of the boot and shoe industry outlined and limited, 239. — Illustration and characterization of these stages and their phases: (*a*) Home Stage, 239. — (*b*) Handicraft Stage, Phase 1, ordered or "bespoke" work, 240. — Phase 2, "bespoke" work plus some extra or "sale" work, 242. — (*c*) Domestic Stage, appearance of entrepreneur, 242. — Phase 1, domestic worker makes complete shoe, 245. — Phase 2, specialization in processes and rise of central shop, 248. — Phase 3, inventions to secure standardization and to economize time, 254. — (*d*) Factory Stage, Phase 1, more direct control and supervision with workers in factory, 257. — Phase 2, intensive production with discovery and use of by-products, and with centralization or absorption of allied industries, 261.

THE development of the boot and shoe industry of Massachusetts proves to be an interesting and productive field for economic investigation, not merely because its history goes back to colonial days as one of the leading industries of the states, but more especially because the evolution of industrial organization finds here an unusually complete illustration. The change from older stages to the modern factory stage has been comparatively recent, and survivals of earlier forms have existed within the memory of the old men of today. Sources, direct and indirect, oral and recorded, can be woven together to establish, to limit, and to illustrate each one of these stages and the transitions of their various phases.

The materials used as the basis of the conclusions given here have been gathered within the last six years and at first hand, but the collection and use of such written and oral testimony has been attended with difficulty. No New England shoemaker of a former generation has dreamed that posterity would seek for a record of his daily work.[1] Only inadvertently have the pages of account books, kept to help "in settling" with neighbors and customers, bills, and letters giving amounts and addresses been left for us. These records, however, are scarce and fast growing scarcer. The spring and fall house cleanings and the demolition of old shops to give place to new factories are destructive to valuable papers of this kind and even where an old attic still harbors them, oftentimes molding and fading under leaking roofs, they are generally difficult of access. The recollections of old men and women who have worked on shoes, in producing or distributing them, are even more precarious. Such people are confused by specific questions, even when the investigator is not a stranger to them. Their confidence can, as a rule, be restored only when the appearance of any special course of questioning has been abandoned. The material which is thus gathered comes imbedded in unrelated matter with little perspective, and with much provincialism; yet it is the most valuable as it is the most vital that can be secured. I have prosecuted such inquiries among the older inhabitants[2]

[1] Exceptions to this do not occur until about 1880 when David Johnson of Lynn and Lucy Larcom of Beverly began to write in prose and poetry about the shoemaker's homely daily life. Since then newspaper reporters have become active in getting such dramatic details as the Blake-McKay and the Howe-Singer relations afforded, or the rise of Henry Wilson of Natick from the cobbler's bench to the vice-presidency of the United States.

[2] I have sought first of all to discover and record the evidence which is daily disappearing. It has seemed, at this stage of the study, more important to reach the octogenarians while their memory still served and their old account books were still undestroyed, than to stop for more than a preliminary examination of the business books and other material now safely deposited in town halls and local libraries.

in a number of Massachusetts towns, not only where the industry now exists but where scattered shops, the "ten-footers" of the domestic period of shoemaking, are the only visible remains of a once flourishing local trade.

Besides this oral and written evidence there are available also public official records like town reports, church parish books, and custom house papers; newspaper files with the advertisements of auction sales of boots and shoes, of domestic and imported hides, of demands for apprentices and journeymen, of sailing dates for vessels, and of western despatch or express companies; and, third, centennial and anniversary addresses,[1] and occasional local newspaper or trade paper reports of old men's recollections. The contemporary official documents and newspapers give little of direct value but serve to give the general setting of the community's industrial activity. The local addresses and reminiscences are nearly if not actually contemporary. Tho tinctured and limited by personal and local pride, by inaccuracy, and by fallacious reasoning as to cause and effect, they are full of suggestion, and help in the appreciation of facts found in other places or other relations.

The information thus gathered seems on analysis to confirm inductively and with definite evidence of the

[1] For example, a dedicatory address delivered by Mr. Loren W. Puffer at the Plymouth County Court-house, by giving facts about Shepherd Fiske, the agent for Governor Bowdoin of Massachusetts, whose blast furnace at Bridgewater in Plymouth County supplied cohorns and grenobles for use in the colonial wars as well as cast iron kitchen implements for local consumption, furnished substantial clues for a study of the iron business in that locality now so famous for its shoe industry. Upon investigation, an explanation was found for the tardy development of the domestic stage in the local shoe industry. The small shops where nails and other small iron pieces were made by domestic workers and their apprentices, gave way to the shoe makers' "ten-footers" only when the iron industry had developed stronger competitors and advanced to the factory stage. Even then the tool making "habit" survived and North Bridgewater (Brockton) was famous for its mechanical inventions and manufactures for the shoe industry.

transitions the stages of evolution set forth by Karl Bücher.[1] In the boot and shoe industry of Massachusetts before 1875 four stages of production may be definitely traced. Altho the stages are distinct as to characteristics and essential features, they are not so as to time, for overlaps and survivals occur. The household economy or home stage, for instance, characteristic of frontier conditions, was early followed by the handicraft organization which prevailed until the middle of the eighteenth century. The domestic stage of industrial organization with its successive and overlapping phases was well under way before the Revolution and lasted to the middle of the nineteenth century, giving place about 1855 to the factory system which passed into its second phase by 1875.

To characterize briefly and then to illustrate sparingly these stages and phases is all that can be done in the limits of this article, which undertakes only to give a preliminary survey of an investigation the detailed conclusion of which, with full evidence, will be later published.

(*a*) Home Stage

During the Home Stage in the shoe industry in Massachusetts shoes were made only for home consumption. There was no market for them. The standard was individual, "the best you could make or have." The farmer and his older sons made up in winter around the kitchen hearth the year's supply of boots and shoes for the family, out of leather raised and tanned on his own or a neighbor's farm. Sometimes, as the community prospered, a travelling shoemaker, — the traditional itinerant cobbler, — was given

[1] Bücher, Die Entstehung der Volkswirtschaft, chap. iv. In Wickett's English translation, pp. 150–184.

jobs enough to keep him busy going from house to house, with his kit in a wheelbarrow or over his back, to help the farmers. Each boy in turn stood on a piece of paper or on the bare floor and had the length of his foot roughly marked off with chalk or charcoal. The shoemaker selected from among his meagre supply of lasts the one which came "somewhere near" that measure. There were only two styles, low shoes or brogans, and high boots.[1]

(*b*) Handicraft Stage

The second or Handicraft Stage came in the Massachusetts boot and shoe industry with easier times in each village in turn. It had been foreshadowed by the itinerant cobbler. Now the real shoemaker could stay in his own shop, working on his own or his customer's supply of leather.[2] He dealt directly with his market in the first phase of this stage and made only ordered or "bespoke" work.

The standard was higher in general in this Handicraft Stage than in the Home Stage, and necessarily higher in some communities than others. There were no gild regulations[3] throughout colonial Massa-

[1] This scene, made familiar by pictures and descriptions of colonial days in New England, has been enacted for me in pantomime by old men whose childhood was spent in Maine and New Hampshire hill-towns where the Home Stage survived nearly to the Civil War. These men were used during their boyhood to the custom, characteristic of this first stage, of farmers exchanging sole and upper leather, or getting their whole supply by tanning the leather for others. A vat established for neighborhood work was apt to prove the nucleus of shoe manufacture at the close of the second stage of production.

[2] See Mass. Col. Legis. of 1648, quoted and interpreted by John C. Commons in this Journal for Nov., 1909, pp. 41–42.

[3] The gild organization was rare enough to be exceptional. Philadelphia and Boston, receiving more new European shoemakers, and being trade centers from the earliest times, developed and maintained it. Edward Johnson in his Wonder-Working Providence of Sion's Saviour in New England (pub. in 1654, p. 207 of Book 3) gives first hand knowledge of this. Cf. Charter of Boston Shoemakers published in full in the Records of the Mass. Bay in New England, vol. iii, p. 132.

chusetts attempting to keep the standards uniform. The shoemaker's craft, however, was a recognized mystery or industry, and men in Massachusetts were given the title of cordwainer in legal documents if they regularly worked at the trade.[1] The number of master workmen in any one town was comparatively small, of course, in this "direct market" or "town economy" period, dependent as they would be upon the possible orders of a single community.[2] Their journeymen went to the frontier settlements to set up in the craft for themselves, leaving the supply of apprentices to fill their places in the future.

The instruction which the shoemaker could give his apprentices [3] had sometimes the benefit of his own training in Europe, in Philadelphia, or Boston, where the best work was done.[4] One can imagine the journeyman who drifted to the frontier to become a master, as giving to his apprentices, in turn, something

[1] See, for instance, the Suffolk Registry of Deeds, for 21st yr. of Reign of Geo. II, No. 74, p. 145, date Dec. 31, 1747, giving deed of Benj. Hunt of Braintree, cordwainer, to Benj. Randall.

[2] In Middleboro, in the southern part of Massachusetts, Paul Hathaway, who had been the travelling cobbler of the village, decided in 1798, when he was 21 years old, to make people come to him with their leather and let him save his time. As his custom business grew he had 3 journeymen and 2 apprentices in his 15×20 shop on Pleasant Street in the midst of the North Middleboro settlement. The men made the pegs and the shoes in this shop while the women spun the flax thread and made the wax in the kitchens. At 30 years of age (in 1807) Paul Hathaway gave up his craft, for working on the bench hurt his stomach, tradition says, but since immediately upon returning to his farm work, he was known as one of the most progressive farmers in the region and had raised 124.5 bu. of shelled corn on 1 acre, winning a prize which is still on record, one wonders if the community didn't hold out higher remuneration to him as a farmer than as a shoemaker. By 1807 the organization of the shoe industry in that community had passed from the first to the second stage and was on the eve of the second phase of the handicraft stage, where "sale work" was appearing to endanger the profits of purely custom-made work. The competition of Hathaway's journeymen and apprentices must be reckoned with also, as cause for his decision.

[3] The form of apprentice indenture papers was given to boys at school as a part of their written exercises so that future masters and apprentices were familiar with the terms. The form is the one in current use in England in the 18th century. Cf. Ebenezer Belcher's Exercise book, 1793.

[4] Traditions of Josiah Field of Boston, who taught Randolph the first "city ways" of shoe making, are peculiarly interesting and well preserved.

less exact and somewhat out of touch with town standards.[1]

There were times when the more advanced apprentices or even the journeymen spoiled a pair of shoes started for a definite customer, and these remained on the master's hands to be disposed of. Then there were slack times when the apprentices might fairly be expected to "eat their own heads off," to the shoemaker's loss. In such a case the craftsman ventured to make up the stock on hand, to employ this otherwise wasting labor, and then tried to dispose of the shoes in the village grocery store.[2] Since the market was uncertain and slow for this extra work, both stock and labor may frequently have been below the standard used in the custom-made shoes. It might naturally happen that the demands would be more steady and the profits could be relatively higher for this lower cost work, even when it was all done at the direction of the same master shoemaker in the same shop and by the same workers by simply using different standards and different grades of stock. In case the shoemakers lived in villages too far from Boston to attract customers but near enough to send in their surplus product, their attention to sale work

[1] Asa C. Jones (b. 1829) was sent by his father, a custom shoemaker in Nantucket, to Weymouth to learn more points of the trade.

[2] The "general store" account books of Skinner and Ward of North Brookfield for 1813 to 1815 when the second stage still survived there, show Reuben Underwood making $10.90 of shoes between Dec. 21, 1813 and July 10, 1815 to put on sale. Doliver and Norwell, joining forces, worked on a larger scale. These same books show that they made $155.25 shoes "to be left" at Skinner & Ward's "on account" between July 2 and Nov. 1, 1813.

1813			
July 2.	By shoes taken and left		$ 47.79
Aug. 9.	" "	43.54, Aug. 14, shoes 18.75	62.26
Oct. 4.	" "	1.04, Oct. 16, " 13.50	14.54
Oct. 27.	" "	29.62, Nov. 11, " 1.04	30.66
	Total		$155.25

would steadily grow. A seemingly typical case, with all its local flavor, can be followed in detail in the bills, letters, account books, and oral traditions of Quincy Reed of Weymouth. He expected to be a shoemaker just as his great-grandfather William, who landed in Weymouth in 1635, and his grandfather and father had been. In 1809 the father was a master with custom work and probably some sale work for local consumption. As Quincy tells the story; "My brother Harvey began it by taking chickens to Boston. He had a pair of chaise wheels in the barn, and putting on a top piece, loaded her up and drove to town. He hung some shoes on the chaise and we sold them in Boston. We did not have a wagon then, — I can remember when there wasn't a wagon in this part of the town, and between here and East Abington there was only one pair of wheels. All the shoes (custom-order and extra "sale" shoes) before we began business were carried into Boston in saddle bags. . . . We hired a store of Uriah Cotting at 133 Broad Street and fitted it up. Then I used to keep a chest of shoes in a cellar near Dock Square and on Wednesday and Saturday would bring out the chest and sell. I got $15 and $20 a day by it in 1809. I was sixteen and my brother was eighteen years old then. We moved into the Broad Street store with two bushels of shoes. I used to cut out what would promise to be $100 worth a day. We couldn't have them made equal to that, but I could cut them. One day I cut 350 pair of boot fronts and tended store besides. Most of the shoes were made by people in South Weymouth. We had nearly every man there working for us before long. Used to bring out the sole leather swung across the horse's back in those days. We didn't have any capital to start with except father's assurance that 'the

boys are all right and will pay their debts.' When we got of age Harvey paid father $1000 for his time and I paid him $3000. By then we had got up a stock of $10,000 and I have the inventory now to prove it. We were getting $2 for the best shoes and $1.25 to $1.50 for the West India shoes. . . ."

This has been quoted at length, even tho it anticipates in part the description of the development in the shoe industry, since it suggests the manner in which that very development was thought of. This was in all probability the way in which the Lynn trade in women's shoes had developed fifty years before that time, indicating how each community worked out the same problem and passed through the same stages of growth at different dates.

(c) Domestic Stage

The close, therefore, of the second phase of the Handicraft Stage, with its growing attention to extra or "sale" work, appears so like the opening phase of the new or Domestic State that it is not readily distinguished, especially where the Handicraft workman changed naturally and gradually into a Domestic Worker employed by a shoe merchant who, as an entrepreneur, marketed the goods. Yet the two stages are fundamentally different. Just as the Handicraft Stage is characterized by the direct dealing of the shoemaker with his market, and his dependence upon his own skill and efforts in making as well as selling, so the Domestic Stage is characterized by the indirect dealing with the market on the part of the shoemaker, who was simply to manufacture the boots and shoes which a capitalist-entrepreneur marketed at his own risk and profit, supplying in whole or in part the tools and materials.

Three phases of the century-long Domestic Stage can be traced, defined, and illustrated. The first, coming gradually by the middle of the eighteenth century, prevailed in Massachusetts by the close of the Revolution.[1] and lasted through the opening years of the nineteenth century. Tho apprentices and journeymen were employed, the less skilled and more irregular labor of the women and girls of the family was also utilized. The shoemaker turned over to the entrepreneur the completed shoe, often the combined labor of every member of his family besides his apprentices and journeymen, but with all the processes done in his shop under his direction. This last fact, that the domestic worker still makes a complete shoe, is to be considered the special characteristic of the first phase of the Domestic Stage.

At the outset of this phase (in some Massachusetts towns as early as 1750), the market was widening and the possibilities of profit were as good in the shoe trade as those in other ventures in the East and West Indies trade.[2] The development of the retail and wholesale

[1] Randolph, which had become a large center of men's boot and shoe manufacture by 1845, was just becoming a separate town in 1793 (having been the South Precinct of Braintree since 1727), but had already passed through the Home and Handicraft Stages into the Domestic Stage by that date. Tradition says that some of its soldiers doing duty at Castle Island during the Revolutionary War had been taught shoemaking by English Soldiers. The historical account of shoemaking in the U. S. Census of 1900 (part III, vol. ix, p. 754) says that in 1778 men's shoes were made in Reading, Braintree, and other towns of the Old Colony for the wholesale trade. They were sold to dealers in Boston, Philadelphia, Savannah, and Charleston, a considerable portion being exported to Cuba and other West India Islands. Whether the industry was new or not to this precinct of Braintree, these soldiers added that craft to farming when they returned to their homes and began to make shoes. One of them, Adonijah French, joined forces with a relative Thomas French, who also had just returned from war and taken up his trade again as tanner and currier. They appear as early entrepreneurs contemporary with Silas Alden, who had his own vat and shop and was employing many domestic workers by the close of the century.

Lynn was far ahead of Randolph in the 18th century both in organization and in standard of work. The account book is still extant of Amos Breed, an entrepreneur of Lynn, who was one of the merchants marketing the Lynn shoes on sale at Boston stores for retail trade or for shipment to the West Indies even before the Revolution.

[2] The London archives hold records for 1771 showing the shipment of 5938 pairs from North America to the British and foreign West Indies. Of these, 1500 pairs of

trade in cities like Boston and Philadelphia tempted capital. There were already more shoemakers than could be supported by custom work or by the small ventures of extra "sale" work. The newspaper advertisements[1] show the demand for Lynn shoes and indicate the competition which makers of women's shoes in Massachusetts had to meet from imported goods. The Lynn entrepreneurs were specializing in women's and children's shoes[2] and leaving the

shoes are from Philadelphia. The bulk of the shipment probably came from the other shoe center, Boston.

[1] The Boston Gazette of April 23, 1754, advertised among the imported goods at Wm. Merchant's store opposite the Golden Ball on the Town Dock, Boston, women's silk shoes, women's and children's callimanco and Morocco shoes and goloshes.

June 2, 1755, Blanchard Cobb and also Appleton of Boston were advertising women's English clogs and shoes. By the pages of the Boston Chronicle for 1768, May 23d, can be seen that along side the imported shoes they were selling at Fred Geyer's store men's boot soles . . . and *best made Lynn shoes*, by the 100 pair, dozen or single pair. Oliver Greenleaf offered beside his "just imported from London" goods some choice men's shoes. These newspapers also advertised John Dagyr "the celebrated shoemaker of Essex" who had come to Lynn in 1750.

[2] Amos Breed's account books from 1763 to 1796 are typical: —

CIMBIL TO AMOS BREED. DR.

1763		£.	s.	p.
May 7.	To make 20 pairs of Callimanco shoes	26	0	0
" 23.	" " 1 " " " "	1	6	0
June 11.	" " 2 " " " "	2	12	0
" 25.	" " 5 " " " "	6	10	0
July 16.	" " 8 " " " "	10	8	0
Aug. 16.	" " 5 " " " "	6	10	0

BRIGHAM TO AMOS BREED. DR.

1764				
Nov. 2.	To make 21 pr. of Calla shoes	3	17	6
" 17.	" " 10 " " dito	1	16	8
" 28.	" " 1 " " "	0	3	8
Dec. 8.	" " 5 " " "	0	18	4
" 21.	" " 8 " " "	1	9	4

These men, Cimbil and Brigham, are hired to make the shoes. Amos Breed is evidently supplying the stock. He is also keeping a sort of custom retail trade at his home in Lynn.

NATHANIEL HOMES TO AMOS BREED. DR.

1766				
Mar. 8.	To 1 pr. of Call. shoes for Poeb	2	30	0
Apr. 19.	" 1 " everlasting " " Hannah	2	40	0
"	" 1 " leather " " Lydia	1	6	0
July 12.	" 1 " silk " " self	2	8	0
" 19.	" 1 " russet " " Poeb	2	60	0

Breed not only hired shoes made and sold them for both domestic and foreign trade but he mended them.

making of men's boots and shoes almost wholly to custom work or to cruder local work. Few if any advertisements of men's shoes appear before the Revolution.

During the years of the war, however, the supply of shoes for the Continental army had to be undertaken, and all of the stock raised and tanned in this country. Accounts show that organization had developed in the shoe industry to meet these conditions by the close of the war. Southern and western Massachusetts had come to specialize in men's shoes, brogans and high boots, while Lynn kept to her older specialty of women's and children's. That the boot and shoe business was considered profitable to capitalists and important to the people at large is indicated by the Federal tariff legislation of 1789,[1] which gave protection to this industry. The tradition seems as well founded as it is detailed that this action was due to the shoe merchants of Massachusetts as well as Pennsylvania. Their pressure was strong enough, joined to the general current towards protection, to over-ride the specific illustration of James Madison against protecting shoes.[2]

WM. ESTES TO AMOS BREED. DR.

1774				
Mar. 14.	To mend a pr. of shoes	0	4	6
Apr. 10.	" 1 pr. of shoes	1	16	0
" 26.	" 1 " " russet shoes	2	0	0
May 14.	" mend 1 pr. of shoes	0	12	0
July 15.	" make 1 pr. of shoes	1	10	0

[1] Tariff rates of July 4, 1789: —

On boots per pair, 50 cents.

On all shoes, slippers or goloshes made of leather per pr., 7c.

On all shoes or slippers made of silk or stuff, 10c. per pair.

Tariff of August 10, 1790: provisions of previous tariff kept and one added which put on leather tanned or tawed, and on manufactures of which leather was the chief article, a 7½% ad valorem duty, but excepted raw hides and skins from the 5% ad valorem duty put on other raw products.

By the 7th of June, 1794, the tariff on boots was reduced to 20c. per pair and that on shoes and slippers, clogs and goloshes to 5c. a pr.

[2] " . . . For example, we should find no advantage in saying that every man should be obliged to furnish himself by his own labor with those accommodations which

The increase of market for boots and shoes and its assured protection did not fail to widen the ranks of capitalists and to intensify the manner of production. A new phase, outwardly marked by prosperity and volume,[1] prevailed in Massachusetts from about 1810 to 1837. The extra capital which was tempted into the boot and shoe industry brought severer competition for orders and suggested specialization to secure rapid

depend upon the mechanic's art, instead of employing his neighbor, who could do it for him on better terms. It would be no advantage for a shoemaker to make his own clothes in order to save the expense of the tailor's bill, nor of the tailor to make his own shoes to save the expense of procuring them from the shoemaker. . . . . The same argument holds good between nation and nation." Cf. Annals of Congress, I Cong. 1834, I, pp. 109–148.

[1] The contrast is shown in the following ledger pages of Belcher's account book for 1808 and 1817.

AMBROSE HOLLIS* to me

To 1 lb. of flax ¼, to 1 half Bushel Corn	$00.74
" meat & butter	.36
	1.10
By making 11 pare of children shoes	1.20
To 1 peck of corn	00.27
By making 6 pare of children's shoes	1.20
	.93
By making 8 pare of children's shoes	1.60
To 1 half bush. of corn to 1 lb. of flax	.74
	.76

Entry of 1817 in same book

EBENEZER BELCHER, CR. TO BASS AND TURNER

Mar.	7.	To making	20	pare of	mens	shoes	2/			6.67
"	20.	" "	50	"	"	"	2/			16.67
Apr.	1.	" "	68	"	"	"	2/			22.67
"	8.	" "	5	"	"	"				1.67
		" "	20	"		"				6.67
May	27.	" "	10	"		"				3.34
June	10.	" "	20	"		"	1/6			5.00
"	24.	" "	20	"		"				5.00
July	11.	" "	40	"		"				14.00

* A Journeyman, married, and living in other half of Belcher's house.

This entry of 1817 meant steadier work on the part of Ebenezer Belcher and his journeymen for he was doing as much as this for other merchants at the same date. Shoe making could no longer be a farmer's by-employment. It also meant that specialized work had come into the industry, for by this time the term "making" included only the processes of lasting and bottoming.

work, and this specialization in processes may be taken as the characteristic of the second phase of the Domestic Stage. The time factor seemed more vital than the quality, for with such big, insistent markets, a merchant could afford to lose a disgruntled customer, sure of having plenty of others. Already the producer did not have to face the consumer or have his reputation hurt by occasional bad work. The standards were therefore lowered, and the competition of employers let into the trade less skilled and almost unskilled labor to do the cheaper work on men's brogans and women's and children's shoes for the well developed trade in the West Indies and the South. A wide difference arose not only between the quality of custom and domestic work, but between the wages of "real journeymen" and shoemakers.

As the workers grew more numerous in the employ of each Massachusetts capitalist and were scattered in their shops, called "ten-footers,"[1] over a wider area, in fact all through New England, from Portland, Maine, to the Island of Nantucket, the need of inspection of the finished product, as well as of saving in the cutting of stock at the central shops became vitally necessary. Previously the stock for both uppers and soles had been given out in skins and sides, leaving it to the shoemaker to cut wisely and economically. What he could save by honest or dishonest means he felt free to keep in his "cabbage" stock box under his low shoemaker's bench. Old shoemakers are found now in every locality who recall with bitterness certain individuals whose dishonesty and poor work led to the development of the central shop. They blame the open way in which scrap leather buyers went about

[1] The name was not exact, for the size of domestic shops ranged from 10×10 to 14×14.

on regular routes to buy up the accumulated "cabbage" stock, which meant loss to the capitalist, while it was a source of profit to the shoemaker and presumably to the scrap-man. These old people make the complaint with little realization that the boot and shoe industry has simply followed the example of the silk and the woolen industry in experiencing, in the course of growth, the need of saving stock as well as time, and of giving to agents the power of inspection formerly exercised by the gild officials of the Middle Ages or by the master shoemaker of early colonial days.

The central shop system rapidly developed after 1820. The stock was cut there, and portioned out, ready to deliver to workers to do the "fitting," *i. e.* the work on the uppers, siding up of seams, binding, counter and strap stitching. When this process was completed the uppers were returned to the central shop and given out with the proper number of roughly cut soles, as well as a definite quantity of thread, to "makers" who would last and then sew the boots and shoes. The makers had to wait generally for their work to be inspected or "crowned" at the central shop. The volume of trade and the amount of specialization can be understood by the study of a single month's business dealings in one firm's ledger for 1833.[1]

[1] White & Whitcomb of East Randolph (now Holbrook) were employing in 1833, from Sept. 4th to Oct. 4th, 12 men and women to do fitting, 30 men to make, and 1 man to do all the cutting, pasting and blacking. Both the styles and the finish were crude, and this is about the usual proportion of labor, — that is, one central shop worker to about forty domestic workers. The large sales during that month were to the following firms: —

	Amt.	No. prs. shoes
J. C. Addington & Co.	$226.18	250
Porter & Tileston	$205.64	212
B. C. Harris	$ 57.50	50
C. W. Howes & Co.	$257.50	250
C. W. Howes & Co.	$237.40	262
N. Houghton & Co.		218
Wm. Tiffany	$100.00	100

The capitalist had to divide his time between his Boston office and his home shop, dealing with buyers, writing letters to order stock and conclude bargains, and deciding on the manner of payment and transportation.[1] He must have been paying attention also to tariff legislation at Washington.[2] He was planning and examining ways of investing the profits of the shoe business in other directions. Many shoe merchants of Massachusetts speculated in Maine lands[3] in 1820–30 and in Western and Southern lands

[1]

PHILAD. 9th 22, 1821.

RESPECTED FRIENDS
H. & L. REED

Your favour of 17th inst. was recd this morning informing that you had received the box of calf-skins and am sorry that they did not give satisfaction. The price at which they were invoiced is lower than skins are now selling for and if you think proper you can return them and we will pay the freight back cheerfully. We are sorry you have been disappointed but we are certain you could not now buy calf skins of similar quality in this city or in New York at so low a price, calfskins of light kind have been sold by tanners here last week at $27 per dos. in the rough. Very respectfully,

Your assured friend,
C. & W. ROBINSON & Co.

(Mail to Boston)

NEW YORK, Oct. 29, 1821.

MESS. H. & L. REED
GENTLEMEN

We herewith enclose you a Mechanics Bank Dft for Twelve hundred and eighty six 35/100 dollars the receipt of which you will please acknowledge to our mutual friends Hubbard Hayden of Richmond, Va., and oblige yours,

Very respectfully,
CUNNINGHAM & MCCORMICK.

[2] In 1816 the duty on boots was advanced to $1.50 a pair. In 1824 this amount was put on laced boots or "bootees" and a tax of 25c. a pair put on prunella or other shoes and slippers. No reduction was made on these heavy protective rates until 1842.

[3] The Littlefield Bros. of East Stoughton (now Avon), who were making money in the Cuban and New Orleans trade, invested over $80,000 in Aroostook County land before 1836. They "pulled out before that money was lost" in the general hard times of 1837, because they needed ready money for the New Orleans trade. There the business amounted to $100,000 a year between 1828 and 1837, but in the early 40's the results of mismanagement and the general effects of the financial depression combined to bring bad debts, so that the firm had to be content to take payments in lands in Mississippi and Texas just when land was a drug on the market.

The Reeds of Weymouth, who had grown rich out of a wholesale boot and shoe trade with such distributing centers as Richmond, Savannah, New Orleans, and Havana, invested in 1833 in Maine lands. Harvey Reed bought a whole Maine township at 9 pence an acre. Quincy Reed, however, withstood the land lure and had for a side issue a grain business which kept four schooners busy in the coastwise trade and with Spain. The bills of lading show the details of this enterprise.

in 1830–40. Not only individual shoe-merchants were in the speculating, expanding mood; whole shoe towns were also.[1] The big fortunes and the market as well came to a sudden end in the panic years of 1837–38. The money tied up in land investments could not be got out in time to tide over the epidemic failures. Then the Massachusetts Bankruptcy Law, by relieving debtors, settled the nicely poised fate of their braver more far-sighted creditors. Ninety per cent of the shoe merchants had to fail.[2] As a rule the men who had smaller trade and smaller risks "held on" grimly, to become the back bone of a new phase of the Domestic System.

By 1840 a new trade with new markets was gradually emerging from the boot and shoe trade, but it had to be coaxed. New styles, niceties and novelties in processes required, however, greater specialization. No manufacturer could afford to lose a single customer by slip-shod work or poor stock.[3] The competition for employment gave the employers a chance to choose only the best workmen. Shoemakers who had developed a reputation for a specialty[4] were in demand.

[1] Lynn built forty-three new streets between 1831 and 1840. North Brookfield, which in 1820 had "nothing doing, no new buildings going up, the same old dwelling houses and farms satisfying the people," had more than one hundred houses newly built by 1838 and old houses had been repaired.

[2] Cf. Eleazar Beal and Cox notes for details of some specific cases.

[3] Johnson of Lynn tells of the helter-skelter work of the previous booming days. Good grain leather uppers and best quality soles were spoiled for wearing shoes by paper stiffenings. Shoes were so badly sewed that they easily dropped to pieces, or well sewed but trimmed so close to either edge that you could not wear a pair a second time before the stiches pulled out. Shoe manufacturers say that very cheaply made shoes are a concomitant of general hard times when "anything will sell that looks well and will hold together till the purchase is made." In good times, "even mill hands won't buy them."

[4] Samuel White of Randolph (*b.* 1831) was known as a champion rapid pegger; spectators came from neighboring towns in the late forties to watch him work in his little ten-footer on Union Street. He has told me that his speed was gained by using both hands at once running the dink, using the awl, and hammering in pegs in quick succession, while he held the pegs in his mouth.

In the old days the shoemaker-turned-capitalist could keep his workers in hand by very casual inspection or a wholesome fear of it. The outsider, as capitalist, could hope at most to know the stock and did not try to master the processes. He was generally wise enough to take as partner a man who knew the trade and could put his brains against money.[1] Otherwise the new shoemaker had to trust entirely to expert workmen, to foremen and agents who were devoted to his interests, and let them determine the details of stock and processes while he looked out for markets and profits.

The market was already making hints if not demands as to styles instead of accepting quietly anything the shoemaker provided. The use of different shapes and widths of block lasts came in the early forties, makers no longer depending upon "instep leathers" for making "fulls" and "slims." Sole patterns gave uniformity of shape and width at ball and shank. Patterns for rounding the soles after they were stitched and irons for polishing the edges were invented and used. Heels were put on women's shoes again[2] and men began to specialize in heeling. More workers were taken into the central shops and expected to do one thing "up to the standard." They were hired to tree boots, or to finish bottoms. Not only every sole in a case must be uniformly finished, but the appearance of the shoes in all the cases sent to one customer must be the

[1] A typical case was that of Eddy & Leach of Middleboro. Deacon Eddy had a general store and the postoffice and was worth $10,000 which had been made, in part, in the shovel business. George M. Leach, whom he took as partner (1852) for the new enterprise, had only $200 but was a regular shoemaker who had previously owned a ten-footer on his farm and "taken out" shoes to make.

[2] Spring heels, which took the place of high ones in 1830, had given place to no heels at all. Brogans were almost heelless, having but one lift. Cf. Johnson, Lynn Sketches, p. 340.

same.[1] This increasing specialization led to the entrance into the shoe trade of young men and women who learned and knew just one process, and the cessation of regular apprenticeship [2] for shoemakers.

Not only did labor have to become more specialized and efficient in this recuperating period of the forties, the third and final phase of the Domestic Stage, but it had to be economized to meet closer competition. That fact, added to the demand for standardization of product, led to the introduction of machinery into the boot and shoe industry. Up to the forties the shoemaker had used mainly tools, and just such as had been used for centuries.[3] His kit included knives to cut upper and sole leather, a lap stone and hammer for pounding leather, awls for pegging holes, a stirrup for holding the shoe in place on the knee, pincers to pull the leather over the last, nippers to pull out tacks, bristles for needles and hemp thread for sewing, a buffing knife or scraper for the sole leather and a shoulder-stick for polishing soles. Then there came a little skiving machine run by hand and not very satisfactory to the older men, accustomed to skiving with a regular knife. The next machines to be invented for boot and shoe work were the "stripper" for

[1] Henry P. Crocker of Raynham, 85 years old in 1912, described one case of this transition. The finishing of soles had been done outside with little uniformity by the individual "makers" who put on the soles. When the Gilmore Factory took the process into the central shop they gave a man only 1c. a pair, however, for finishing. Several men had failed to make a living at it and Crocker hesitated at the offer in 1847, for he was getting $9 a month "making" for someone else. Soon, however, he was earning $1 a day, then $2 and sometimes $3. His "partner hand," working beside him, did the sand-papering; Crocker put on the oxalic acid to whiten the leather, polished it with a sheep's leg bone, stamped it with the firm name and gave it to another man to "dress."

[2] There seems to be no definite, or even indefinite, case in Massachusetts of a shoemaker's becoming a regular apprentice to learn to make a whole boot after 1840. This has been a point in my investigation for several years.

[3] Interesting details of similar early tools and methods of shoemaking in Germany are given in Beitrag zur Geschichte der mechanischen Schuhfabrikation, by Gewerbeassessor Dr. Rehe, Breslau, pp. 186–187.

cutting up sides of sole leather, and the "sole-cutter." A leather-rolling machine came in 1845 to save both time and strength formerly used in hammering sole leather on a lap-stone. Several styles of pegging machines [1] and a machine for cutting up pegs had been patented and put in general use by the time [2] the sewing machine, invented by Howe in 1846, had been adapted to upper leather work on shoes by John Brooks Nichols in 1852.[3] There was the "dry thread" machine with a shuttle and two threads for the lighter upper work, and the "wax thread" to do chain stitching for the heavy work of "siding up" bootlegs. These sewing machines even then impressed people with their significance. Instead of merely making things easier or a "bit more speedy," they produced work which could not be matched by hand in either speed or appearance.[4]

By 1855 so general had become the use of sewing machines that shoemakers who could afford it had

[1] Cf. Rehe, pp. 188–189, for the story of Krants and the introduction of the pegging machine into Germany.

[2] Proofs of dates of invention are in an unsatisfactory state at present. Not only local historians and biographers, but the United States Census Reports of 1860 and 1900, give merely approximate or relative dates for many inventions and for their introduction to practical use. Only a minute study of the patent records could furnish an indisputable array of such dates.

[3] For details concerning Nichols and his adaptation of the Howe Machine, see The Sewing Machine Journal of April 25, May 25, 1904, July 10, July 25, and February 10, 1911. These are first hand reports and illustrated. They give valuable facts on the Howe-Singer-Leavitt machine controversy.

[4] In the United States Census Report of 1860 (p. 71) this significance was not only expressed but coupled with an interesting prophecy. "The crowning invention of all, which has supplanted and given value to all other kinds of machinery, in the manufacture of boots and shoes, is the *sewing machine*. It has introduced a new era in the trade. Without it, the partial use of machinery upon the bottoms of boots and shoes was attended with little economy, because the cost of *stitching and binding* the uppers, which was the larger item of expense, was not reduced in a corresponding degree. Altho of quite recent introduction in this branch of industry, its employment along with the sole-cutting machine, and other appliances, is gradually bringing about a *silent revolution* in the boot and shoe manufacture. . . . It is safe to predict that this change will go on until the little workship of the shoemaker with its bench and kit shall become a thing of the past as is the hand card and the great and little spinning wheel."

them in their homes to use on both cloth and leather. But it was generally the manufacturer who put the machines into his central shop, or the man with some capital and genius for machinery, who bought or leased the "wax thread" and "dry thread" machines and set them up either in a stitching shop or in a central shop where space was hired. Men and young women followed the machines, leaving the older people to "side up" and bind shoes by hand at home.[1] Thus a new stage of organization had come in the boot and shoe industry, bringing to an end not only the third phase but the main life of the Domestic Stage, where the "putting out" system had prevailed and the entrepreneur had worked in his central shop while the domestic workers labored in their "ten-footers." Only the "making" (*i. e.* lasting and bottoming) of sewed shoes continued to be done by domestic workers far into the next period, until the McKay machine for sewing the soles and finally the Goodyear welting machine put an end to this last survival of the Domestic System.

[1] The books of Howard & French of Randolph for these years and of E. Twitchell & Co., of Brookfield, show the hand work and machine work going on side by side, and the relative cost and volume of each. The Twitchell firm had specially ruled and printed ledgers for record of work "put out."

Date when taken	Binders name	No. of Case	Kinds of Leather Clf. | Kip. | Buff | Split	Quality 1st. 2nd.	Sizes Wom. Miss Chil.	When Returned	Price paid

This allowed the firm to keep track of where the stock was, even if it did not secure its speedy return.

The Twitchell order-book shows not only the prices and distribution of the goods made in the 50's and 60's, but the means of transportation by various "young railroads" and western despatch companies. The Howard & French books show the order and truck payment system surviving well up to the end of this Domestic Period. They employed Elbridge Jones and Jerome Fletcher, who were stitchers, by the day at a uniform wage of $1.66 2/3 a day, paid partly in cash, in dinners (at the rate of 14¢c. apiece) in stock, in butter, in hay. Howard & French had their own general store, and seldom gave orders on other stores.

There is much evidence in such account books to confirm the accuracy of the picture given by F. A. Walker (Wages Question, p. 136) of the methods in which payments of wages were made in New England before the Civil War.

(*d*) Factory Stage

The expansion which came after 1850, associated with the Californian and Australian gold discoveries, emphasized the increasing economy of large scale production, and hastened the transition from the Domestic to the Factory System. Immense orders with big profits stirred and pushed to its very limit of production the boot and shoe industrial organization. Forty-niners who had left shoemaking relations at home or gone out from shoe towns, naturally saw the chances for marketing Massachusetts boots in California. The same held true in Australia.[1] Meanwhile the southern and southwest markets held steady with growing orders. Even the crisis of 1857 did not do general damage enough to interrupt the increasing shoe trade.

Agents sent home more orders than could be filled with the old rate of speed and equipment. When the hundred or more cases were engaged to go on a certain steamer, due to leave Boston[2] for its route round

[1] Randolph boot manufacturers were among the firms to profit earliest by this trade. Mr. Jonathan Wales left his home town in time to have a shoe store established in San Francisco in 1851. At first he bought his goods of the Wentworth, the Whitcomb, and the Howard & French factories of Randolph. His business increased until he was handling the output of over twenty firms in Randolph, Stoughton, and North Bridgewater. Meanwhile he had entered the firm of Newhall and Gregory of San Francisco, who sold at auction all the boots and shoes consigned to Jonathan Wales.

Mr. Frank Maguire established himself as agent in Melbourne, Australia, and marketed almost the entire output of the Burrell and Maguire factory in Randolph. Both Mr. Wales and Mr. Maguire, as distributing agents, sent home to their employing manufacturers new orders that then seemed incredibly large, and either drafts on Boston banks or bags of gold. I have seen at the home of Mr. Wales' son and daughter some of these bags, made of white drilling and stencilled with large figures giving the amounts, sometimes as high as $20,000. A large silver salver presented to Mr. Jonathan Wales in 1856, gives the names of twenty men connected with the firms which had profited by his skill and efforts.

[2] Advertisement cards like the following were sent to manufacturers: —

Winsor's Regular Line, For San Francisco.
From India Wharf.
To sail June 25th. The Celebrated Extreme New York Clipper Ship Golden City
Capt. Leary.

This Ship has been put in the most perfect order, and is now in her berth with a part of her cargo on board. She is THE great favorite with New York shippers.

"the Horn" on a certain day, duly advertised, the boots must be done on time or risk being rejected at their tardy arrival in California or Australia. The domestic worker had enjoyed all the latitude he needed or wished. He sowed his fields and cut his hay when he was ready. He locked up his "ten-footer" and went fishing when he pleased, or sat in his kitchen reading when it was too cold to work in his little shop. The agents or "freighters," [1] who came down from Maine and New Hampshire with sample shoes to show the workmanship and to take back big express wagons full of un-made boots and shoes, were never sure when washouts or snow storms might delay the return of the stock. Books show that the women who "fitted" and the men who "made" boots and shoes were irregularly employed before the late fifties, and obviously at their own request. They knew that the work must be inspected at the Central Shop before they were paid, but the pay "would keep."

The rush, then, of the California and Australia trade put a stop to this condition in every shop when it brought orders from new trade or increased those from the old. More crimping and finishing, as well as cutting, pasting, and finishing was done "under the roof." There was now a greater inducement to manufacturers to invest in sewing machines for the

Her passages have been made in 102 and 106 days, while other clipper ships, sailing at the same time, were 120 days.

Her ventilation is perfect, and her cargoes have been delivered in the most perfect order. Shippers who wish to be sure of their goods reaching California in October, will appreciate her.

The well known favorite medium ship CROMWELL, Capt. Adams, now in her berth, and loading, will sail about the 1st of July.

For Freight or Passage, apply to

NATH'L WINSOR, JR. & CO.
corner of State and Broad Sts.

June 7, 1858. Watson's Press, 25 Doane St.

[1] Cf. Spinney, Mullen, and Amasa Clarke notes.

uppers and to have the siding up and binding done in the shop by alert younger women and men, instead of by the old women at home. Practically the whole laboring population [1] of a shoe town was employed in the shop or the factory. Even for the making of boots a "gang" [2] of four or five men frequently hired a room in the vicinity of a central shop, or in it. Thus the manufacturer, to save time and to hold markets by prompt delivery of large orders in the fifties, unconsciously completed the movement well on its way in the forties, in order to meet competition and the demands of standardizing, of having shoemaking done under one roof under supervision. This is the chief characteristic of the Factory Stage of the boot and shoe organization; it had entered the industry gradually and almost unawares.

Larger buildings, now called manufactories, more capital, larger supplies of stock were the more apparent features of the growing boot and shoe trade even in the fifties.[3] By 1860 steam power was being intro-

[1] Statistics of the Massachusetts Census of 1865 show the following proofs of this: —

	Engaged in Manufacture		Engaged in Agriculture		In Boot & Shoe Manufacturing	
Town	Males	Females	Males	Females	Males	Females
Randolph	1845	281	61	0	1789	248
Stoughton	1051	254	200	0	964	184
Abington	2605	358	165	0	2479	346
North Bridgewater	1231	213	240	0	1059	208

[2] 1 lasted,
1 pegged and tacked on soles,
1 made fore edges,
1 put on heels and "pared them up."
and in the case of hand sewed shoes 2 or 3 sewers were needed to keep the rest of the gang busy.

[3] There was, for example, the new Gilmore factory built in Raynham in 1857; very different from the usual grocery store or private house, turned into a central shop. It seemed like a visible proof of big trade and profits, for it had a wide porch with Doric columns, office fitted with Venetian shades and black walnut desks and railing; an elevator and dumb waiters; speaking tubes from every room to the office; a steam whistle to summon employees, and a driveway through the lower floor for ease and expediency in receiving and shipping freight. There was a carpenter shop and a special carpenter. The large machine shop, with a forge and a machinist permanently in

duced into the larger manufactories, making the hand labor of the domestic worker seem pitifully slow in comparison with the stitching done by steam driven machines. By the time the Goodyear Welt machine was put on the market in 1875 and people at large realized that the Factory System had come and the Domestic had gone [1] one whole phase of the Factory System had already passed.

The Factory System, which had come in the late fifties, was the prevailing type of organization during the Civil War. The large orders of shoes for the Union Armies, added to the scarcity of labor caused by the volunteering and drafting of soldiers, were additional important factors in the use of machinery in general and in encouraging the trial of the McKay machine. During the War the practicability of the McKay machine with steam power was demonstrated, and it was widely adopted during the late sixties. More specializing came on the part of both shoe workers and manufacturers. Some southern Massachusetts

charge, was probably one of the chief reasons why Mr. Blake and Mr. McKay came to this factory, five years later, to try out the McKay machines. Meanwhile Mr. McKay was urging the Gilmore brothers to help finance the movement of putting the machine on the market.

[1] The Massachusetts Census for 1875 (vol. ii, p. 825) gives tables showing the number and wages of women "furnished with work to do on boots and shoes at home" for the year ending May 1, 1875. A few are given here: —

Town	Number of Women	Total Yearly Wage	Yearly Average wage of each domestic worker
Amesbury	4	$700.00	$175.00
Lynn	575	82,559.00	143.58+
Haverhill	225	20,207.00	89.80+
Randolph	39	1,750.00	44.87+
Stoughton	2	150.00	75.00
Webster	35	1,200.00	34.28
No. Brookfield	6	690.00	115.00
Braintree	1	300.00	300.00

These figures show that there was a marked difference among these few domestic workers either in the amount, or regularity, or the quality of their work, and also a wide difference in the completeness with which the factory system was adopted in these old shoe manufacturing centers.

towns made shoes only, others boots. Some towns in the western part of the state made only cheap brogans for laborers, while others made a finer grade of shoe to be distributed by New York jobbers. The increased variety of styles within this classification made it necessary to dispose of stock while it was in fashion.

The "expansion tendency" of the decade after the Civil War led, as it did in the thirties, to over speculation. Shoe manufacturers put more money into railroad stock and western lands than they could steadily hold there, so that when the hard times of 1873 came, many failures were found in the shoe trade.[1] Thus the first phase of the Factory Stage, like the second phase of the Domestic Stage, closed with a sense of disaster and had again to be followed by a period of recuperation.

The history of the boot and shoe industrial organization since 1875 makes the story of the second phase of the Factory Stage. Its course may be simply indicated, being outside the limit set for this paper. It has been characterized chiefly by an intensive system of production, tho in common parlance its chief characteristic has been the use of the Goodyear Welting machine. Competition, which has been not only acute but world-wide, has forced economies and heightened the chance of loss on the ever-increasing variety of styles which the product must take to capture the market. The insistent discovery and use of by-products, the absorption of allied industries by some shoe manufacturing firms, and the greater reliance

[1] The trouble caused by the St. Crispin organization in demands and strikes did not seem to make serious financial difference to the Massachusetts shoe industry. Local accounts of specific contests, while interesting and prophetic of later union trouble, do not affect this conclusion, nor put the blame for failures in the shoe trade on the shoulders of labor.

placed by others on highly specialized allied industries,[1] the immense increase in the size of plants and of the number of employees, have all necessitated the perfecting of the factory system. The rise of the "labor problem" with the closely contested struggles with organized labor has also especially characterized this period. This central phenomenon, however, together with the other factors of transportation, market organization, and finance, which have so profoundly modified industrial organization, must be left for later presentation.

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[1] The signs seen on buildings when one approaches a shoe manufacturing center, showing where heels, rands, counters, welting, findings, patterns, lasts, dies, cartons, and boxes are made, furnish a graphic illustration of the scope of allied industries. These make possible what Marshall calls "external economies" arising from "the concentration of many small businesses of a similar character in particular localities"; the "subsidiary trades" which grow up in the locality of a large industry, "supplying it with many implements and materials, organizing its traffic, and in many ways conducing to the economy of its material." Principles of Economics, pp. 266–271 (6th edition).

THE LOCOMOTIVE ENGINEERS' ARBITRATION: ITS ANTECEDENTS AND ITS OUTCOME

SUMMARY

History and Organization of the various Railroad Brotherhoods, 264. — Their policies: removal of inequalities, seniority, attitude toward closed shop, 267. — Methods of payment and wage schedules for the engineers, 272. — Concerted movements by various brotherhoods before 1910, 273. — The successful strategy of the conductors and trainmen in 1910, 275. — The engineers' demands of 1910, adjusted by mediation, 279. — New demands for the eastern territory in 1912; final reference to the Board of Arbitration, 280. — Arguments of engineers, 284; of the railroads, 286. — The award, 288. — Some general questions: pay on weak roads, increase of freight rates, fairness of general rate of wages, 290. — The concluding recommendation of compulsory arbitration, 292.

THE Board appointed in June, 1912, to arbitrate the questions at issue between the eastern railroads and their locomotive engineers announced its decisions and recommendations on November 25th, after nearly five months' consideration. The case is of exceptional interest, because the engineers' demands and their method of attack illustrate the new trend of railroad labor union policy, because of the high character of the board and the unusual thoroness of its study of the matters in dispute, and, not least, because the board went beyond the adjustment of the differences of the moment to suggest a method of preventing further serious labor difficulties. Undoubtedly the award will form an important precedent in the settlement of the differences now in course of adjustment with other railroad labor unions, and its influence will

probably be felt by labor unions in general. From the active interest in the case outside of railroad circles, it is safe to predict that public opinion will become a more potent factor in curbing selfishness and unreasonableness in either or both parties to future wage controversies.

Before undertaking the consideration of the recent activities of the railroad labor unions, it seems advisable to summarize the history and policies of the organizations among the men in train service. They are all effectively organized and militant. The Brotherhood of Locomotive Engineers is the oldest and strongest. It was organized in 1863 and for the greater part of its life (1874–1903) had in P. M. Arthur an able and conservative leader. The order has had no serious conflict since the unsuccessful Burlington strike in 1888. Its policy of non-affiliation with other organizations has been followed consistently. The engineers are proud of their record for adhering to the terms of their agreements with the railroads. In the exceptional cases of breach of contract on the part of local lodges, severe discipline has been administered by the national officers, even to the point of expulsion from the organization.[1] Mr. Arthur held the respect and confidence both of engineers and railroad managers, and his administration after the Burlington strike was marked by an absence of friction with employers. His successor, Warren S. Stone, still Grand Chief Engineer, has held to Mr. Arthur's conservative policies, at least until very recently. Beginning with the negotiations in Chicago in 1910, his attitude has become somewhat more aggressive; but, on the whole, it cannot be said that the good reputation of the

[1] To give an instance, the charter of the lodge comprising the engineers on the New York Elevated Railway was cancelled and the members expelled from the brotherhood because of an unauthorized strike in March, 1905.

brotherhood has suffered at his hands. Mr. Stone came into office with little experience in organization matters. He began work at nineteen as a fireman on the Rock Island road, and served twenty-four years as an engineer. During the two years prior to his election as grand chief, he was general chairman of the Rock Island engineers, but had no other training for the administration of the most important of the railroad brotherhoods. The finances of the organization and its insurance subsidiary (the latter a feature common to all railroad labor unions) are strong; and the membership, which embraces nearly 90% of all the engineers in the United States, Canada, and Mexico, is about 72,500.

Next in importance among the railroad brotherhoods is the Order of Railroad Conductors, which was organized in 1868 and has a membership of approximately 49,000, or about 90% of all train conductors. It has followed the lead of the engineers in their policies and is a close second in conservatism. Within recent years, however, it has become closely affiliated with the younger trainmen's organization, and the more radical tendencies of the trainmen are reflected in the newer policies of the conductors. It is now customary for conductors and trainmen to act together with the railroads in joint conference. One wage agreement includes both organizations, and in the personnel of the joint committee the conductors are outnumbered by the members of the younger brotherhood, since the latter represents not only train brakemen and train baggagemen but yard switchmen as well.

Next in point of age comes the Brotherhood of Locomotive Firemen, which had its beginning in 1873. A few years ago its name was changed to the Brotherhood of Locomotive Firemen and Enginemen, a recog-

nition of its growing engineer membership. Altogether, the organization includes about 75,000 men. It is making a strong bid to retain the newly promoted engineers, and is undoubtedly working toward a consolidation with the older organization on terms favorable to the firemen. Both brotherhoods have mutual insurance based on the assessment plan. Because of the higher death rate, the assessments on the engineers are heavier than on the firemen, and the firemen, when promoted, are reluctant to give up their more favorable insurance rates. At the same time they would like to have the protection of the older and stronger organization. The firemen are constantly working for the right to represent their engineer members, a monopoly jealously guarded by the Brotherhood of Locomotive Engineers. The differences between them are of vital importance to the engineers' organization and conflicts have not been avoided, sometimes involving the railroads in strikes.[1] At the present time a *modus vivendi* is generally recognized which gives the engineers' organization the sole right to negotiate with the companies on wage questions and working rules affecting engineers, and to represent any engineer in an appeal from discipline; while the firemen's organization deals with the companies on wage and rules questions for the firemen, and has the right to represent its engineer members when they have grievances to be adjusted.

The youngest organization in train service, but the strongest numerically, is the Brotherhood of Railroad Trainmen, which dates from 1883. Its membership is said to be 136,000 and, as already stated, includes not only the train brakemen and train baggagemen

[1] The Southern Pacific had a strike of firemen in 1906 because the company would not recognize them in attempting to legislate for yard engineers who belonged to the firemen's organization.

but also conductors, brakemen, and switch-tenders in yard service. A rival organization, the Switchmen's Union of North America, claims a small proportion of the yard forces. It was organized in 1894 and is said to have a membership of somewhat less than 10,000. Its influence is confined to Buffalo, Chicago, St. Paul, Minneapolis, and a few small yards in the northwest. What little prestige it had was seriously damaged by a strike in 1909 in the Northwest, which was begun while mediation proceedings were in progress. The strike was lost, and the switchmen charge its failure to the trainmen, who, they say, went beyond the point of neutrality in assisting the companies to keep traffic moving.

With the exception of the shop crafts, there remains but one other important national railroad union, — the Order of Railroad Telegraphers. It was organized in 1886 and has about 40,000 members. The membership includes railroad telegraph operators, signalmen, towermen, and a few agents who act also as telegraph operators. Its policies, compared with those of the train service brotherhoods, are somewhat radical,[1] and its history records frequent strikes and discord, not only with employers but within its own ranks. The telegraphers belong to the American Federation of Labor, as do also the Switchmen's Union and the shop crafts. None of the train service brotherhoods, however, are affiliated with the American Federation, tho on some railroads there are local federations to which conductors, trainmen, firemen, and telegraphers are parties. The engineers generally hold themselves aloof from anything of the kind, as they are opposed

[1] For instance, the telegraphers attempt to restrict the number of operators by forbidding their members to assist "students." This attitude had much to do with the extension of telephone train dispatching, since the operators need not be proficient as telegraphers.

to sympathetic strikes. Early in the history of their organization, Mr. Arthur personally, and the engineers as a body, were severely condemned by other organizations, particularly the Knights of Labor, for this attitude, and there was bitter feeling between the leaders at the time of the Missouri Pacific strike in 1886. The engineers believe that it is unwise to pool their issues with the younger and less conservative brotherhoods. The engineer's risk is greater than that of a fireman or brakeman; he jeopardizes a more valuable position obtained by longer service; his contribution in strength and prestige is out of proportion to that of the other organizations; and he fears the results of entangling alliances.

In the early days of railroading, and before the growth of the brotherhoods, there were wide dissimilarities in the rates of pay and working conditions on the different railroads. Even on roads in the same territory, and indeed on different divisions of a single railroad, there was little uniformity. Working conditions were established without recourse to collective bargaining, and the employee had little voice in fixing the scale of wages. There were occasional instances of local unions of railroad men, but they were short-lived and ineffective. The influence of the unions was not felt until after the close of the civil war. Then the engineers took the lead in gaining recognition as a union, and established in railroad service the principle of collective bargaining. As the strength and solidarity of the brotherhoods developed, important concessions were made by the railroads, such as the principle of promotion according to seniority in service, and the abolition of rates of pay graded according to length of service. Gradually the larger hardships in working conditions and inequalities in rates of pay

were ironed out, and something approaching uniformity began. First, twelve hours was established as the length of the working day; then ten hours; and now their efforts are directed toward an eight hour day.[1] Working agreements became the rule, and negotiations were conducted with committees, frankly recognized as representing the brotherhoods, or, less frequently, received only as representing the employees in a particular branch of the service. So, during the past twenty-five years, the great majority of the railroads have accepted the new conditions, not only recognizing the right of employees to organize and deal collectively, but conceding that this method is not without its advantages to the companies as well as to the employees. The Pennsylvania Railroad is somewhat unique in its long continued policy in refusing to deal directly with unions as such, but that this company has at length receded from this untenable position is evident from the fact that it was party to the recent conferences with the engineers' brotherhood, and that an officer of the company is chairman of the conference committee of managers appointed to conduct the negotiations now under way with the firemen's organization.

The older school of railroad managers deplores the evil effect of labor unions on efficiency and discipline. The younger officials are inclined to regard them as a condition in modern industrial organization which is to be accepted and met. Much has been written on this subject, and much remains to be said.[2] It may be noted in passing that the insistence of the unions upon the application of the seniority principle,

[1] The recent award in the engineers' arbitration establishes the equivalent of a five hour day in through passenger service.

[2] The topic is interestingly discussed in The Confessions of a Railroad Signalman by James O. Fagan.

which automatically places the oldest man in point of service in the preferred position without regard to special fitness or merit, undoubtedly puts a premium on mediocrity. The incentive to meritorious service, which obtained under former conditions, is now largely lacking. The man who does his work indifferently, and just manages to keep out of trouble, stands practically the same chance for promotion as his more ambitious fellow who discharges his duties with zeal and distinct ability. The saving clause that seniority shall govern "when merit and fitness" are equal is difficult of enforcement. The superintendent merely has it within his power to debar from promotion those whose records clearly show incompetency. But the burden of proof is on him in such cases, and his only effective method of off-setting the defects of the seniority rule is to use more care in the selection of new men when recruiting brakemen and firemen, and to maintain a comprehensive and continuous policy of supervision and education. The responsibility for the rule lies as much, if not more, with the railroads as with the unions, since the urgent demand for seniority grew out of the early practice of favoritism by superintendents and their subordinate officials. The one undisputed advantage of seniority is that it eliminates the discontent and disloyalty growing out of unfair discrimination, and some railroad managers go so far as to say that this outweighs its disadvantages. Yet the rule tends to make "average" men, and its influence on efficiency is downward.

Seniority has built a high wall around the older men in train service. It was designed by them to keep out intruders, but it also keeps in and restricts the mobility of those it is designed to protect. An engineer or conductor is practically anchored for life with one

railroad. He cannot move to another line, much as it might be to his advantage, without sacrificing valuable seniority rights on the road he leaves. He must begin at the bottom of the list on the other road. With yardmen and young brakemen there is still some mobility, and these occasionally gravitate toward the roads with favorable working conditions and promise of quick promotion. But as standardization progresses there is less incentive to move, and such changes become relatively infrequent.[1]

Nominally, the railroad labor union does not insist upon the "closed shop." It is difficult to ascertain just how many employees in train service remain outside the union ranks, but it is probably close to the mark to say 10%. Mr. Stone, of the engineers, has stated frequently that engineers have no objection to working with non-union men. They aim to make the organization such that all engineers will *wish* to join it. A man who comes in against his will, they regard as a dead weight in times of peace and a menace in times of trouble. Some men, says Mr. Stone, they cannot get; others they do not want; but no effort is made to prevent the non-member from reaping the advantages secured by the organization for the engineers as a body.[2] This is stated also to be the policy of the other train service brotherhoods.

As a practical matter, however, the man who remains outside the pale of the unions is in an embarrassing position. No open objection is made, but his motives

[1] At one time a certain railroad in Pennsylvania secured many of its freight brakemen and switchmen from other roads with less favorable working conditions. They thus obtained experienced men at the expense of the less favorably situated roads. Now that conditions have become standardized, this shifting is negligible, except when changes are made for other reasons.

[2] So stated in an address by Mr. Stone at Harvard University, January 24, 1910. It is possible that the competition of the firemen's organization has some influence in this broad policy of the engineers.

are questioned and he is covertly made to realize that his fellow workmen look upon him as a "sponger" who profits by all of the advantages obtained by the organizations without the assumption of risk or expense. Then, too, if he is careless or unfortunate, and feels that he has been treated unjustly by the railroad officials, he will find it difficult to interest the committees in his case. The open shop policy, therefore, is more nominal than real.

The early basis of payment in train service was the trip, day, or month. But because of differences in the amount of work done in a day or on a trip the unions advocated and secured the general adoption of the mileage basis, which is essentially a piece-work plan, safeguarded by generous minima. Trainmen and enginemen are now paid a certain rate per mile for the different classes of service, and in the case of the engine crews the compensation is further graded to take account of the weight or size of the engines. The common basis for the minimum day is one hundred miles or ten hours, with a guarantee of at least ten miles per hour. If one hundred miles are made, the trainman is paid for the actual mileage at the specified rate per mile. If the run is less than one hundred miles, a minimum of one hundred miles is allowed. If, however, he is on duty more than ten hours, he is paid on the basis of at least ten miles per hour for all time on duty, unless his actual mileage is greater than the hours multiplied by ten. The engineers' new basis in through passenger service is twenty miles per hour. In some cases an exceptional rate is paid to men in local freight service where mileage is small and hours are long. In fixing the mileage rate the endeavor is to insure a reasonable day's pay, taking into account the characteristics of each class of service

and the skill and exertion required. These differences will be illustrated later in the discussion of the engineers' arbitration award.

Coupled with the rates of pay, the agreements between the organizations and the railroads (commonly termed the "wage schedule") contain certain rules which affect compensation, define the line of promotion, procedure in investigations, appeal from discipline, and many other matters incident to operation. The agreements are often long and go into extreme particularity. Some of them have from sixty to seventy articles, covering fifteen or more octavo pages. Usually they are made effective for one year from the date of execution and thereafter with thirty days' notice of a desire for revision. Generally speaking, they are now revised about every two years. Negotiations are conducted with the company by a general committee representing the employees in one branch of the service, but in case of a disagreement the employees frequently call upon their national officers to assist them in making the final settlement.

A recent development in the method of handling such negotiations is seen in what is called the "concerted movement." Since 1906 there have been several instances of the kind, and the engineers' case, just decided, was one of them. The national officers of an organization, under this plan, serve notice on all the railroads in a given territory that they desire to revise the agreements, suggesting that a committee of managers be appointed to represent all of the railroads interested and deal with a committee representing the employees on those roads.

At the present time three distinct territories are recognized. The eastern embraces all the railroads east of Chicago and north of the Chesapeake and

Ohio railway; the western includes the lines radiating northward, westward, and southward from Chicago and St. Louis, with the Illinois Central as the eastern dividing line; the southern takes in the roads south of and including the Chesapeake and Ohio, and east of but not including the Illinois Central.

The first notable concerted movement was launched by the conductors and trainmen in western territory in 1907. The joint committees represented thirty-eight railroads with 101,500 miles of line and 42,500 conductors and trainmen. They failed to agree, and the railroads requested mediation under the Erdman Act. Accordingly the mediators (Chairman Knapp of the Interstate Commerce Commission, and Commissioner of Labor Neill) went to Chicago, and succeeded in bringing about an agreement, the results of which were favorable to the employees affected.

The next important concerted movement to secure higher wages was brought about by the firemen early in 1910. This occurred also in western territory and again the railroads, after several unsuccessful conferences, asked the mediators to use their influence. Tho mediation in itself failed to settle the difficulties, the Board succeeded in getting the two parties to arbitrate. The mileage of the roads affected was 110,000 and the number of firemen about 26,000. The arbitration award carried with it material increases in pay, but, as is usual in such cases, was a compromise between the rates demanded by the firemen and the increased rates offered by the companies before the case went to arbitration.

With a view to duplicating in the east their earlier successes in the west through concerted action, and to bringing about standardization [1] of wages and working

[1] Standardization, as used here, does not mean one rate for *all* conductors or trainmen regardless of the character of the service. The plan recognizes differences in

rules in both territories, the conductors and trainmen, early in 1910, adopted similar tactics in the east. They had intended to follow up their advantage and start the movement in eastern territory immediately after the conclusion of the western movement in 1907. This programme, however, was upset by the business depression which began in the latter part of 1907, and action was deferred until January 1, 1910. Then they sent notices and uniform demands to all of the eastern roads, with request for joint action. Up to that time the important concerted movements had been confined to the west. In the east, the managers believed that the greater differences in physical, operating, and traffic conditions made standardization impractical. When the request for concerted action was considered by the General Managers' Association of New York, there was difference of opinion as to whether the roads should deal in concert or individually, and the majority decided upon the latter course. Subsequent events proved that their wiser course would have been to act together, since the organizations (as will be explained later) accomplished their purpose in another way by the exercise of superior strategy.

Having been denied concerted negotiations, the organizations then proceeded to serve their demands on the individual roads. These were uniformly refused because they were considered unreasonable, and the local committees, acting under instructions from their national officers, would accept nothing short of the proposed basis. Meeting with no success in this method of attack, the organizations selected one road

passenger and freight service, and in through and local runs, and contemplates a classification of switching terminals according to density of traffic. What it means is absolute uniformity in the classification of rates and the working rules on every road in a given territory.

on which to make a trial of strength, and all activity was centered upon the Baltimore and Ohio railroad, which, with the exception of the Pennsylvania railroad, already had the highest "going rate" in the east. The Baltimore and Ohio would not accede to the demands and a strike vote was taken which gave the union officials power to use extreme measures. When the situation became serious, and a strike seemed certain, the railroad requested the Federal Mediation Board to intervene, and through its influence a compromise was reached which gave the men considerable increases in pay and established a new bench mark in eastern territory. Operations were then shifted to the New Haven railroad, at a time when it was involved with the Massachusetts legislature with respect to its policy of expansion; and the new Baltimore basis was forced on the New Haven and Boston and Maine roads with little difficulty. The organizations then focussed their influence on the New York Central, which refused to entertain the demand for the Baltimore basis because of widely dissimilar operating conditions. Again a strike was threatened, only to be averted by an agreement to arbitrate. The confidence of the men in the strength of their position is shown by the fact that they rejected three arbitration proposals before they finally accepted the fourth. The first was that the Federal Board of Mediation should pass on the case, since they had assisted in the settlement on the Baltimore and Ohio; the second, that the Public Service Commission of New York State be asked to decide; and the third, that the presidents of the chambers of commerce of the important cities on the New York Central act as an arbitration board. The suggestion finally accepted was that the whole question should be referred to two

arbitrators — Mr. E. E. Clark, of the Interstate Commerce Commission, and Mr. P. H. Morrissey. The former for many years was head of the Order of Railroad Conductors, and the latter until quite recently was the president of the Brotherhood of Railroad Trainmen. The railroads were then actively engaged in their propaganda looking toward increased freight rates, and it is possible that the New York Central hoped that Commissioner Clark, in passing on the proposed increased wages, might be impressed with the railroad argument that higher rates were necessary to offset a largely increased pay roll expense.

In the meantime, the Lackawanna, Delaware and Hudson, Erie, and other roads in the same section were drawn into the controversy, and they agreed to accept the award of the New York Central arbitration. The award became effective on April 1, 1910, and, with a few exceptions in the case of long distance through runs, gave the Baltimore basis. The Pennsylvania railroad had always paid higher rates than any road in the east, and the organizations, in turning their attention to that system, insisted upon maintaining the favorable differential. They asked that that company should establish rates which were higher than the Baltimore scale. The Pennsylvania company held out, and as they seemed to have the support of public opinion, the unions finally accepted the company's offer to apply the New York Central award, with the understanding that existing rates which were higher should not be disturbed. Other smaller railroads were brought into line, and standardization for conductors and trainmen in the whole eastern territory was accomplished.[1]

[1] For further details see an article by the present writer on "Standardizing the Wages of Railroad Trainmen," Quarterly Journal of Economics, November, 1910.

While the conductors and trainmen were engaged in this standardization movement, the engineers and firemen (acting separately) were also busy in the east. Concerted action was not undertaken. Each road was dealt with individually through the local committees, and the success of the negotiations was not uniform. It is probable that the engineers did not anticipate the large increases which finally attended the longer drawn out efforts of the conductors and trainmen. Much to their chagrin, they realized, when the smoke cleared away, that they had not fared as well as the train crew. The standardization feature had brought the smaller roads and branch lines to the high Baltimore basis. The engineers found, particularly in New England, that the excess which had always existed in their favor in comparison with conductors had been materially lessened and in some cases had disappeared entirely. Generally speaking, the engineers had been fairly well satisfied with the increases granted to them by the individual roads, the average rate of advance being close to 10% until it appeared that the increase to conductors and trainmen averaged 20% in the whole territory, and even more in New England. The two facts which were particularly distasteful to the engineers were the substantial narrowing of the differential over the conductors and the exceptionally large increases to yardmen, the latter in some cases exceeding 50%. Before the changes took place, the wages of a yard brakeman in New England were on the average 65% of the yard engineer's rate; after both rates were increased, the brakeman's percentage of the engineer's rate rose to 88%. The absolute increase to the yard engineer was twenty-seven cents per day; that to the yard brakeman was $1.10 per day. Under the 1909 basis, a

suburban passenger conductor received $3.84 per day, and the engineer was paid $3.90. After the 1910 increases, the conductor's rate was advanced to $4.20 per day, and the engineer's rate to $4.18, — two cents per day less than the conductor instead of six cents more.

Leaving this unsatisfactory condition in the east to be adjusted at a later date, the national officers of the engineers turned their attention to the west, and there, in the fall of 1910, began a concerted movement for higher rates and important concessions in rules. Their original demands called for 27% average increase in rates. The railroads offered 6% flat. Then the engineers came down to 15% and again to 13%, but the railroads would do no better than to "split the difference" at 9½%. This was not acceptable to the engineers; but the rock on which the negotiations were wrecked was the unreasonable demand for double pay for engineers when operating the large locomotives of the Mallet articulated compound type. These powerful engines have a tractive force nearly double that of an ordinary locomotive. The economy in their use is mainly in the item of labor; their ability to haul greater tonnage means a smaller number of trains and consequently fewer train crews. The engineers naturally viewed with alarm the possibility of a more extensive introduction of engines of the Mallet type, and they would not compromise on the railroads' offer of seventy-five cents more than the highest freight rate. The engineers attempted to justify their demand for double pay on the ground of increased work and great skill, and endeavored also to apply a "value of service" theory, which they advanced more specifically in the more recent dispute. The Mallet engines do twice the amount of work; —

therefore, it was said, the engineers should have twice the ordinary rate. Obviously the reasoning is unsound. Besides, it was clearly shown that altho a higher degree of skill is necessary in the operation of the larger locomotive, the labor is no greater than on any locomotive. On the contrary, it may even be less, because of the labor saving devices (such as power reversing gear) with which the Mallet engines are usually equipped. That the mediators were able to convince the engineers that their position was unreasonable is evident from the fact that the proposed rule has not been included in the more recent demands. Instead of double pay, they finally accepted, through mediation, an excess rate of $1 per day more than regular freight rates. The final wage basis gave them an increase which averaged 10.1% or slightly more than voluntarily offered by the companies before mediation was invoked.

The new and higher rates in western territory gave an additional reason for re-opening negotiations in the east. In doing so in December, 1911, the engineers demanded a basis which would not only restore their former favorable position with respect to conductors, but would also establish a wage scale higher than had been recently secured in the west. This brings us to a consideration of the controversy which has just been settled by arbitration.

Concerted action was decided upon by the men; and the railroads also agreed to act in a body. A committee of the General Managers' Association of New York met Grand Chief Stone and a sub-committee of engineers, but the two bodies failed to come to an understanding. In fact, the railroads refused to consider the schedule as presented, characterizing the proposed rates and rules as excessive and unrea-

sonable. Negotiations were broken off, and the engineers' committee proceeded to ascertain the temper of the whole membership on the advisability of enforcing the demands by a strike. According to Mr. Stone's statement, the engineers were overwhelmingly in favor of extreme measures. The managers did not weaken; Mr. Stone showed no inclination to compromise; and the situation became alarming. So far as the engineers were concerned, all preparations were made to strike.[1]

Once more, and within a few hours of the time limit set by the engineers, the Federal Mediation Board averted a strike which, had it become effective, might have paralyzed the commerce of the country. On their own initiative, and without a request from either party, the mediators tendered their friendly services, which were at once accepted. There is ground for the belief that this is all that Mr. Stone hoped for, and that he never would have resorted to a strike when so uncertain of the support of public opinion. Before the Mediation Board offered their services, the railroads suggested that the whole matter be referred to the Interstate Commerce Commission. Mr. Stone, however, would not agree to this, and the Commission declined to be drawn into the controversy. It is probable that even had both parties joined in a request, the attitude of the Commission would have been the same.

[1] While the railroads stood firm, and apparently meant to allow the engineers to strike, it is interesting to note that practically no preparation was made for such a crisis, nor was there any discussion of the possibility of finding competent men to operate their locomotives. As a matter of fact, it would have been next to impossible to move traffic without the engineers, and it is evident that the railroads, knowing the futility of attempting to replace the men, relied entirely upon the force of public opinion to side with them when the full extent of the engineers' demands became generally known. Possibly they may have counted on assistance from the firemen, altho it is doubtful if the firemen's ambition to increase power would have led them to take such questionable advantage of the engineers.

Mediation in itself proved ineffective, but out of the conferences came the proposition to arbitrate. On April 30th, an agreement was reached, under which a Board of seven men were to be appointed to arbitrate, one each to be selected by the railroads and the engineers, the two so selected to agree upon five neutral arbitrators. It was provided that in the event of the failure of the two to agree upon the selection of the five men, they were to be appointed by a committee consisting of the Chief Justice of the United States, and the two members of the Mediation Board. It was inevitable that the two partisan arbitrators would not agree, and the remaining five were, on June 8th, appointed according to agreement.[1]

The first hearing before the Board was held on July 15th, and the hearings continued daily until July 27th. To assist the Board in sifting the pertinent facts from the mass of evidence, several experts were engaged, including Professor F. H. Dixon of Dartmouth. All statistics and other evidence were subjected to searching analysis and, in addition, the Board collected additional information through its experts. The stenographic proceedings, and the briefs of both sides, not including the many statistical exhibits, cover about 1600 printed pages. There was every evidence of judicial, painstaking, and thoro treatment of all phases of the subject.

In order to appreciate the significance of the award, it is desirable briefly to review the facts and arguments

[1] The members of the Board were:
Oscar S. Straus, philanthropist, New York City.
Charles R. VanHise, president of the University of Wisconsin, Madison, Wis.
Frederick N. Judson, lawyer, St. Louis (member of Hadley Railroad Securities Commission).
Albert Shaw, editor of the Review of Reviews, New York City.
Otto M. Eidlitz, New York City, former president of the Building Trades Association of New York, member of National Civic Federation.
Daniel Willard, president, Baltimore and Ohio R. R., Baltimore (for the railways.)
P. H. Morrissey, president, Railway Employees' and Investors' Association, — former president, Brotherhood of Railroad Trainmen (for the engineers).

as they were presented. Grand Chief Stone handled the case for the engineers. Considering that he had had few educational advantages and an entire lack of legal experience, and was pitted against a formidable array of trained railroad attorneys and managers, he exhibited remarkable skill in marshalling his evidence, in pleading, and in cross-examining the railroad witnesses. He represented about 30,000 engineers employed by fifty-two railroads. The mileage of these railroads constitutes about 25% of the total in the United States, and as it includes the lines of densest traffic, this 25% handles 47% of the freight tonnage and 43% of the passenger mileage, and receives 40% of the operating revenue of all the railroads in the country.

The demands of the engineers fell under three general heads: —

(1) Higher rates of pay in all classes of service, and standardization so that the rate for each class of service and for engines of certain cylinder dimensions would be classified exactly alike on each of the fifty-two roads and their branches.

(2) New rules of service, which would indirectly increase compensation.

(3) A monopoly of employment for steam engineers on electric locomotives and motor cars or multiple unit trains.

The railroads estimated that the new scale of wages and amended rules would entail an increase averaging 17.71% and would mean that the average yearly compensation of engineers would be increased from $1500 to $1775.[1] The exact percentage of increase in the rates alone was not stated, but it probably

[1] The Board considered this an over-estimate, and set the existing average as nearer $1400. On this basis, the new wage scale would make the annual wages $1640.

approached 15%. Considering both rates and rules, the range of the combined increases was from 10.41% on the Bessemer and Lake Erie to 56.36% on the Coal and Coke Railway. The new wage schedule was to recognize no distinction between main lines and branches; level and hilly roads; lines of dense and thin traffic; or strong and financially weak companies. The new rules called for additional compensation for delays within the minimum day of ten hours, both at the initial and final terminal; for delays of more than fifteen hours when held away from home at the opposite end of the run; for time held between terminals when obliged to "rest" under the requirements of the federal "hours of service" law; and for additional compensation of twenty-five cents per day for engineers in local freight service. In electric service, the engineers objected to the employment of motormen to run motor cars or multiple unit trains and insisted that they should be manned by steam engineers. They looked ahead to the ultimate large extension of electric service on existing steam railroads, and viewed with alarm the possibility of further encroachment on their monopoly by motormen belonging to a rival organization. The action of the Pennsylvania railroad, in contracting with the Hudson and Manhattan company to divide between them the crews operating electric trains between New York and Newark, precipitated this issue.

Mr. Stone, at the outset, disclaimed the high cost of living as the principal argument for increased compensation. Living expenses he regarded largely as a matter of individual standard and taste. He advanced the following as the important reasons: —

(1) Increased responsibility because of heavier trains, higher speed, and more complicated locomotives.

(2) Greater skill and efficiency required by the more exacting character of the service. Physical and educational examinations have become more rigid; operating rules have become more complex; and signal indications have become more numerous and harder to observe faithfully.[1]

(3) Increased hazard because of the conditions enumerated under the first and second headings, and which have shortened the average service life of an engineer (as an engineer) to eleven years and seven days.

(4) Increased productivity, or as stated by Mr. Stone, "value of service." From the engineer's viewpoint, he is not receiving his proportionate share of the profits from the introduction of larger locomotives which haul longer trains.

Mr. Stone also referred to the higher rates now in effect in the west and in the south as justification for better wages in the east, but he seemed to emphasize "value of service" as a controlling argument. His attempt to show that the engineer is entitled to a larger share of the profit, due to more economical methods, was unconvincing, and it is apparent that the Board was not impressed by the first three arguments. More effective were his arguments and evidence showing that in the adjustments of 1910 the conductors and trainmen had been dealt with more generously, and that (as already explained) the long standing differential over the conductor had been seriously narrowed or, in a few cases, wiped out entirely.

It is unnecessary to go into detail on the arguments offered to support the demand for additional allowances under the proposed rules. Much testimony was given to show that on some roads a hardship

[1] It strikes one as strange to hear of engineers complaining about an increase in the number of signals, since signals are primarily to safeguard train movement and prevent accidents in which the engineer is the first to suffer.

was imposed on engineers in holding them on duty without extra pay before or after the required mileage was made, when managerial foresight might have afforded relief; also to show that occasionally the men suffered loss of earning power by being held away from home or on the road. One cannot escape the conviction that these cases were exceptional, and called for individual negotiation with the offending roads rather than for general rules penalizing alike the well managed and the poorly operated. In all, Mr. Stone called twenty-five engineers to give detailed evidence as to the nature of their duties, the skill, watchfulness and endurance required, and the extent of hardship obtaining under existing methods of operation.

The railroads, in rebuttal, built their case around the opening statement of Mr. B. A. Worthington, president of the Chicago and Alton Railway, who acted as special agent for the conference committee of managers. Altogether, 130 statistical tables, charts, and explanatory statements were filed with the Board, and sixteen railroad officials testified. Their evidence was designed to show: —

(1) That the engineers were already paid relatively higher rates than any other class of railroad employees and that railroad employees as a body were well paid.[1] Changing conditions in operation were recognized in the 1910 wage increases to engineers and no material change has occurred since then. The engineers' vitality and working years compare favorably with those of workers in other lines of employment and the engineers have been fully compensated for the increase in the productive power of their labor incident to

[1] In the "Advance in Rates" cases, 1910, the Interstate Commerce Commission had remarked: — "Organized railroad labor is probably as well paid, and some say better paid, than labor of other kinds, on the average."

modern methods or facilities, in the creation of which they had no part.

(2) To grant the demands would compel the railroads to give the same relative increases to other employees, the combined result of which would be to increase operating expenses by $67,000,000 per year. The effect would be the same as placing a lien of $1,340,000,000 of 5% bonds, — the equivalent of increasing the total capitalization 43%.

(3) The financial condition of some of the roads was such that the increased expense would spell bankruptcy, and the credit of all and their ability to make improvements would be seriously impaired.

(4) To grant monopoly to steam engineers in electric service was contrary to public policy. Electric operation is essentially different from steam service, and the railroads, in extending their electrified area, should not be limited in the selection of operators, when men, other than steam locomotive engineers, are equally equipped and available.

(5) The proposed standardization was inequitable, since it did not recognize widely different physical, traffic, operating, and financial characteristics; and was not real, since the engineers insisted that existing rates or rules which were better than the proposed standard should not be changed.

It was shown in the evidence that some of the engineers who testified were paid more than $200 per month. One man, in a recent month, received $251 for a daily run which kept him on duty five hours and fourteen minutes per day. Another received $181 for a run daily, except Sunday, which required six hours and ten minutes duty per day. One statistical table of the Pennsylvania railroad is worth reproducing. It applies to the lines east of Pittsburg in October, 1911, and embraces 75% of the engineers on all trains:—

Item	Passenger Trains		Freight Trains	
	Through	Local	Through	Slow Freight
Number of trains	11,434	10,409	6,285	22,978
Average hours on rail	4.18	4.46	8.03	9.11
Average hours on duty	4.68	4.96	8.53	9.66
Average earnings per hour on rail	$1.232	$0.938	$0.731	$0.588
Average earnings per hour on duty	$1.101	$0.844	$0.688	$0.558
Average earnings per trip[1]	$5.16	$4.18	$5.87	$5.38

The award finally made by the Board can hardly be regarded as satisfactory to the engineers. Briefly, it refused to grant the demand for standardization, holding that local variations in the character of the service should, to a reasonable extent, be reflected in rates of pay. It did, however, recognize the principle of a minimum wage in three classes of service, — passenger, $4.25 per day; freight, $4.75 per day; and switching, $4.10 per day, — these minima to apply to all of the railroads. The proposed scale of the engineers had called for $4.40 to $4.60 for passenger service; $5.25 to $7.00 for freight; and $4.50 for yards. Beyond the minima just stated the award did not go, but such higher rates as were already in effect continued to apply. The established minimum rates were very little higher than the existing scale, particularly in freight service, where rates lower than $4.75 applied only to a few of the very old and light locomotives. In passenger service, the increase secured by the new minima applied more generally, and probably averaged about 5%. In yard service, some engineers benefited, but many roads already paid more than the rate awarded. The bulk of the increase, therefore, went to the passenger men. Taking both rates and the more favorable working rules into account, the total effect on the engineers' pay roll was relatively slight, probably about 3%; ranging from 1.8 to 5% on the larger roads, and 20 to 30% on the few weak lines.

[1] Computed from hourly rates; not shown in original tabulation.

As regards the proposed rules, the award was more favorable to the engineers. In way freight service their request for twenty-five cents per day additional was granted. They also gained recognition of the right to compensation when held away from home; but pay does not begin until the period so held exceeds twenty-eight hours, instead of the fifteen hour limit set by the engineers. The Board also conceded the engineers' request to have work trains, helping engines, circus trains, and other irregular service of this character, classed as through freight, which carries higher rates of pay. No initial terminal delay was allowed, but for final terminal delays exceeding one hour, compensation at overtime rates must be paid. This was an important victory for the men, a yardmaster being now prevented from taking from a train crew the benefits of a quick run by holding the train a long time at the entrance to the yard. Some relief was also granted to crews " tied up " on the road through the operation of the " hours of service " law. A discussion of the technical details, however, is not here called for.

On the proposal that engineers should have the monopoly both in steam and electric service the Board decided that steam engineers should have the preference in electric service at the minimum passenger rate of $4.25. It was held, however, that existing contracts shall not be affected. This left undisturbed the relations between the Pennsylvania railroad and the Hudson and Manhattan company. Except in that particular the decision was satisfactory to the engineers, granting them their desired monopoly at minimum steam service rates.

The clause in the proposed schedule which provided that existing rates or rules more favorable than the

award should not be lowered or amended was granted. Mr. Stone, in his opening address, stated frankly that while the engineers wanted standardization, they were unwilling to give up any better privileges already secured as a result of individual bargaining in previous settlements.

The award was made retroactive to May 1, 1912, being put in force for one year from that date. It may continue in effect indefinitely, — until the engineers express their desire to revise. Whether they will do so will probably depend on the outcome of the negotiations now (January, 1912) pending between the railroads and the other brotherhoods. The firemen, trainmen, and conductors have asked for great advances, and the results of their efforts will influence the engineers.

Turning now to some general questions raised in the arguments and evidence, it deserves to be noted that the railroad argument for the weak road was given scanty consideration. It was held that every road must pay reasonable wages, regardless of financial ability. The Board called attention to the extensive intercorporate holdings of the securities of the fifty-two roads taking part in the proceedings. Six systems control 89% of the entire mileage. Even the remaining 11%, owned by twelve small companies which are classed as independent, have "interlocking" directors who are on the Boards of the larger companies.

A suggestion was made to the Board during the hearings, or at least implied, that the award should recognize the justification, from the railroad viewpoint, of an increase in freight rates.[1] This was dismissed with

[1] The testimony of President McCrea of the Pennsylvania Railroad may be interpreted as a plea for such recognition. He feared that continued encroachment on the reserve would impair railroad credit, and earnestly set forth his view that if further wage increases were granted an advance in rates must follow.

the statement that if any road finds itself unable to pay reasonable wages it may apply to the Interstate Commerce Commission for authority to increase its rates. Such action obviously is open to the roads in any case, and the suggestion of the Board will in itself probably carry little weight with the Commission. In any event, an increase in rates, unless effective on all competing lines, would be of no benefit to a weak line, and even if it were of benefit, the Commission may not discriminate between a poor road and its competitor of greater financial strength.

Nothing was said in the award about the general rate of the engineers' pay, or its fairness or sufficiency when compared with the pay of machinists or similar workmen in other industries, altho evidence on this point was introduced during the hearings both by the railroads and the engineers. The Interstate Commerce Commission has intimated that the wages of railway employees are not low;[1] the railways contended that they were high enough, even generous. In any discussion of the fundamental questions thus involved, it might be expected that this aspect of the case should be considered. The Board, in its discussion of "The Basis of a Fair Wage," went no further than to compare the average earnings of engineers with those of conductors, trainmen, and firemen. It is obvious that locomotive engineers have great responsibilities, and that the interests of the railways and of the public call for the selection of men who are watchful, intelligent, well-trained,—a picked lot. Pay should be high enough to attract and hold such men. It would seem equally obvious that the railroads should not be required to pay more than is sufficient to get such men. The vulnerability of a railroad system, the

[1] See the note to p. 286.

immense loss from sudden cessation of traffic, existing state of public suspicion and even hostility toward the roads, the strength of the brotherhood organization, — all these create a temptation for the employees to press their demands higher and higher, and to secure for themselves a virtually favored position among the workmen of the country. Whether the engineers seemed to have done anything of the sort in this case, the Board did not undertake to say; indeed it entered on no consideration of the problem from this point of view.

Possibly this question of principle was involved in the concluding parts of the Board's report. It put on record emphatically its opinion that the interest of the public in controversies of this kind is greater than that of employer or employee, and suggested that railroad labor unions should be subject to control by federal or state wage commissions, with authority to settle wage disputes. The Board proposed for the unions the same kind of control now exercised over combinations of capital. Essentially, this would mean compulsory arbitration.

Compulsory arbitration is strongly opposed in this country by the labor organizations. It is true that in the early days of the Knights of Labor their platform contained a plank which favored the principle. But in the hearings before the Industrial Commission in 1899, the labor leaders who testified were unanimous in their opposition. Many railroad managers now favor the principle. President Delano, of the Wabash railroad, suggested two years ago [1] that a court of labor arbitration should be established, and the Railway Age Gazette, the leading railroad journal, has advocated editorially that the Interstate Commerce

[1] Railway Age Gazette, April 7, and May 12, 1911.

Commission should deal with disputes on wages, as well as on rates.[1] Only a few years ago, suggestions of this kind were resented by the railroads and, if favored at all, were advanced by employees. The balance of power, formerly held by the railroads, is now with the unions, and it is not surprising that railroad managers generally are in sympathy with this recommendation of the Board. Neither need we be surprised to find that Mr. Morrissey, the engineers' representative on the Board, dissented from the findings as a whole, and particularly objected to compulsory arbitration. In an able minority report, he found fault with the premises on which the Board based its minimum rates, and strongly criticized the proposal for a wage commission. He believed that present methods, tho imperfect were far to be preferred, and asserted that the peace which might be secured by compulsory arbitration would be purchased at too dear a price. To quote his concluding words: "To insure the permanent industrial peace so much desired will require a broader statesmanship than that which would shackle the rights of a large group of our citizens."

The concluding recommendation of the Board deservedly attracted wide attention. It is not novel; but it had never before been so conspicuously and effectively presented in connection with an important labor arbitration.

Whatever may be the ultimate effect of the award and its recommendations, the work of the Board beyond doubt ranks high in the achievements of arbitration tribunals. It not only discharged ably its responsibilities in settling the disputed points in this specific case, but advanced a constructive pro-

[1] Railway Age Gazette, April 8, 1910.

gram which would afford the necessary protection in future wage controversies to all the parties concerned, — not only the railways and their employees, but the public also.

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THE DECISION ON THE UNION PACIFIC MERGER

SUMMARY

The suit by the Government in the Circuit Court, 296. — Organization and growth of the Harriman system, 297. — Purchase of the Southern Pacific, 300. — Agreement with the San Pedro, Los Angeles, and Salt Lake, 302. — Relations with the Santa Fe, 304. — Competition prior to 1901, 307. — Effect of consolidation, 316. — Argument that the method of combination employed was legal, 319. — Opinion of the Supreme Court, 320. — Will dissolution impair efficiency in operation? 326. — Nature of the decree, 327.

EVER since the decision in the Northern Securities case dissolving the merger of the Hill lines, it has seemed probable that an attempt would be made to break up the equally powerful Harriman system in the Southwest. It is true that the facts in the two instances were not altogether the same. The component parts of the Harriman lines were not competitors before their union in any such obvious way as the Great Northern and Northern Pacific had been, while the combination of the Union and Southern Pacific was not accomplished through a holding company formed for the purpose, but came about through a stock purchase by a genuine operating company. Doubtless for these reasons prosecution was postponed until less equivocal cases had been disposed of. The delay had the advantage, as matters turned out, of allowing a prior investigation by the Interstate Commerce Commission; so that the Government was enabled to incorporate in its record a large amount

of evidence presented in January and February, 1907, without the expense of taking the testimony itself.[1]

The suit for dissolution under the Sherman law was finally brought by the United States before the Circuit Court for the District of Utah. The Government named as defendants the Union Pacific and its subsidiary companies, the Southern Pacific, the Santa Fe, the San Pedro, Los Angeles, and Salt Lake, the Northern Pacific, the Great Northern; certain individuals, — Edward H. Harriman, Jacob H. Schiff, Otto H. Kahn, James Stillman, Henry H. Rogers, Henry C. Frick, and William A. Clark; and the Farmers Loan and Trust Company, the depositary of the San Pedro shares under the trust agreement of 1902. It asked decrees forbidding the Union Pacific, Oregon Short Line, and Oregon Railroad and Navigation Companies from voting shares of the other companies named in the petition, and also decrees enjoining these other companies from recognizing any shares which the Union Pacific and its subsidiaries might happen to hold. Briefs were filed by P. F. Dunne and N. H. Loomis for the Union Pacific and its subsidiaries and for the Southern Pacific. A separate brief was submitted for Mr. Frick, and a memorandum in behalf of Messrs. Stillman, Schiff, and Kahn. The Government's case was directed by Frank B. Kellog and Cordenio A. Severance, with the Attorney General's assistance in the preparation of the brief. All of these gentlemen had been employed before in prosecutions under the Sherman law, and Messrs. Kellog and Severance had tried the case against the Southern

[1] References, unless otherwise stated, are to the record submitted to the Supreme Court. The testimony and exhibits in the Merger Case fill thirteen volumes and constitute an important addition to the source material on railroad transportation.

Pacific in the Circuit Court. Mr. Severance, however, bore the burden of examining and cross-examining witnesses in the case at bar, and was the best informed, as he was perhaps the ablest, of the Government counsel.

The original report of the Interstate Commerce Commission had dealt with the Harriman lines as a great combination of competing railroads.[1] The Circuit Court rendered its decision on June 24, 1911, and contrary to general expectation this proved unqualifiedly adverse to the Government's contentions. The case turned on the question of competition. Two judges ruled that the Union Pacific and the Southern Pacific were connecting and only incidentally competing lines.[2] Judge Hook filed a dissenting opinion. Appeal was taken to the Supreme Court in October of the same year.

The facts in the case seem reasonably clear. The so-called Harriman group of railroads in 1912 comprised a mileage of about 18,500 miles. It stretched from Omaha, Kansas City, and New Orleans on the east to Los Angeles, San Francisco, and Portland on the west, and by means of the Morgan Steamship Line it reached New York. In addition it owned a majority of stock in the Pacific Mail Steamship Company, which carries freight and passengers from the Pacific Coast to the Orient and to Panama. Of the total mileage west of the Mississippi-Missouri River and south of the Northern Pacific Railroad the Harriman management controlled 19%. Finally, through stock ownership in the Illinois Central, the Chicago and Alton, and other lines, and by contract with the San Pedro, Los Angeles, and Salt Lake, it possessed in

[1] 12 I. C. C. Rep. 277.

[2] 188 Fed. 102.

varying degree influence over connecting and competing roads.

The different parts of the system were held together by a rather complex system of intercorporate stockholdings. The keystone of the structure was the Union Pacific Railroad, which held in its treasury all the stock of the Oregon Short Line, most of the stock of the St. Joseph and Grand Island, and considerable quantities of the shares of the Illinois Central and of the Chicago and Alton. The Oregon Short Line in its turn owned half of the stock of the San Pedro, Los Angeles, and Salt Lake, substantially all of the stock of the Oregon-Washington Railroad and Navigation Company, 46% of the shares of the Southern Pacific Company, and interests in the Baltimore and Ohio, New York Central, Chicago and Northwestern, and other lines. The Southern Pacific Company, most important of all the Union Pacific subsidiaries, was a holding company, which owned substantially all the stock of the Central Pacific, the Southern Pacific Railroad, the Galveston, Harrisburg, and San Antonio and other roads in the Southwest, the Southern Pacific Railroad Company of Mexico, the Oregon and California, and other less important companies. The Southern Pacific Company also leased and operated the Central Pacific, the Southern Pacific Railroad, the Oregon and California, and the Southern Pacific Coast Railway. Including the Illinois Central the securities of the Harriman companies outstanding aggregated some $2,600,000,000, of which $1,650,000,000 were in the hands of the public.

Three periods may be segregated in the growth of the system. The shares which the Union Pacific possessed in the capital of the Oregon Short Line, the holdings of the Short Line in the Oregon-Washington

Railroad and Navigation Company, and the holdings of the Southern Pacific Company in the railroads of the Southwest and in the Central Pacific represented the normal growth of the Pacific railways which had been chartered in 1862 and 1864. The construction of the Short Line was undertaken by Union Pacific interests in order to secure a connection with the Pacific Coast, and was financed in return for the stock of the company and a portion of its bonds. The Oregon Railway and Navigation Company[1] was purchased for the same reason, under the very nose of the Northern Pacific. In like manner, the parties which originally built the Central Pacific constructed additional track southward along the Californian coast, and then east through Arizona, New Mexico, and Texas. As a pure matter of convenience they organized different companies as they went along, and finally welded all together by means of stock control. It was in the second period that the control of the Salt Lake Company by the Union Pacific and Oregon Short Line was secured, and then also that the Union Pacific bought its holdings in the Southern Pacific. About the same time shares were purchased in the Northern Pacific which were later sold again. The third period began with the dissolution of the Northern Securities Company and represents the result of reinvestment of the sums secured from the sale of Northern Pacific and Great Northern stock. Among other securities certain shares in the Santa Fe were obtained. For the purposes in hand we have to deal mainly with the second group of purchases, as these, with the addition of the Santa Fe operation, were the basis of the Government suit. The characteristic feature of the earlier and later

[1] Later expanded into the Oregon-Washington Railroad and Navigation Company.

development was the acquisition of connecting lines; only in the middle period, if at all, was competition suppressed.

It is a matter of common knowledge that as late as 1901 the Union and Southern Pacific Companies were entirely independent. Of the original builders of the Southern Pacific, Hopkins had died in 1878, Crocker in 1888, and Stanford in 1893; but until August, 1900, Mr. Collis P. Huntington, then holding 37½% of all the Southern Pacific stock outstanding, refused to compromise in any way his company's separate existence. The record shows that proposals were made to him. The Union Pacific, dependent on the Southern Pacific for direct connection with San Francisco, and fearful lest at Mr. Huntington's death his stock should fall into unfriendly hands, offered to purchase his shares, or failing this to conclude a permanent alliance. To this offer Mr. Huntington remained indifferent. Huntington died, however, in August, 1900, leaving his Southern Pacific stock to his widow and nephew in the proportion of two-thirds and one-third respectively; and both, as had been anticipated, proved willing to dispose of their holdings. Negotiations were carried to completion in February, 1901. 475,000 shares were purchased from the Huntingtons and from Edwin Hawley, the late financier's most intimate business associate, while enough was secured from other parties through Kuhn, Loeb and Company to make an aggregate of 677,700 shares, at an average price of 50.6146. Market quotations were then in the neighborhood of 45%. On February 4, Kuhn, Loeb and Company engaged to deliver to the Union Pacific one month later 72,300 additional shares at the same price, plus 4% interest from February 11, bringing the company's holdings up to 750,000 shares. This, in

Mr. Harriman's opinion, was sufficient for control. A year or two later an attempt to force the Southern Pacific to pay in dividends earnings which its managers thought should be expended in improvements led the Union Pacific to acquire still another 150,000 shares. In January, 1910, purchases were renewed for the last time, in view of pending legislation in Congress which promised to make the possession of an absolute majority of Southern Pacific stock desirable; but these purchases ceased after 74,000 shares had been obtained, and 50,000 shares were subsequently sold. This concluded the episode. On June 30, 1911, the Union Pacific through the Oregon Short Line owned 1,266,500 shares of Southern Pacific common, or 46% of all outstanding — sufficient to give undisputed control.

It was stoutly maintained by Mr. Kahn, of Kuhn, Loeb and Company, that the desire to control the Southern Pacific line from San Francisco to El Paso was not a motive in the transactions described. The necessity of buying the Sunset Route, he said, was considered an obstacle and a deterring feature. If a way could have been found to secure the Central Pacific alone, it would have been preferred at the time. The possible reduction of competition was not even considered at any of the meetings of the Executive Committee at which the subject was brought up. The same was true of the acquisition of the boat lines to the Orient, the business to Colorado and Utah points, and other minor phases.[1] Speaking of the Southern Pacific, Mr. Kahn declared: —

> We knew it would require a great deal of money to be spent on it, we knew it added thousands of miles to the burden of administration and management. We were very anxious that the Union Pacific should receive as much of the administrative ability and

[1] Pp. 4713–4714 Kahn.

of the railroad genius of Mr. Harriman as it was possible for him to give it, and we were rather disinclined to put upon him any more burden than was necessary to the best development of the Union Pacific; and therefore we, individually, felt that if the Southern Pacific could be separated, keeping only the Central Pacific and the north and south lines in California, and getting rid of the southern part of the Southern Pacific, we would be getting rid of a nuisance.[1]

Some plausibility was given to this contention by Mr. Gould's later admission that he had requested a half interest in the Southern Pacific purchase, and had told Mr. Harriman that if the Union Pacific did not take the stock he would take it himself for his roads.[2] At this time the Gould lines ended at Ogden, and the control by them of the Central Pacific would have been disastrous to Union Pacific interests. There was also talk of possible construction to Ogden by the Burlington or the Chicago and Northwestern. No proof of intent is now possible. One can only surmise that Mr. Harriman was unlikely to have overlooked the great extension of his power in the Southwest which acquisition of the Sunset Route was bound to bring, whatever might have been true of the bankers who were supporting him.

A few years after the Southern Pacific purchase, the San Pedro, Los Angeles, and Salt Lake was brought into the fold. This line runs from Salt Lake City southwesterly to Los Angeles, cutting three or four hundred miles from the route via Sacramento, and giving to the Union Pacific yet another independent outlet to the coast. It appears that the project had been originally planned by Union Pacific interests and over a million dollars spent; but that the plans had been interrupted by the Union Pacific bankruptcy and had not been resumed until 1898.[3] In that year

[1] P. 4731 Kahn. [2] Pp. 4952–4957 Gould. [3] P. 3435 Eccles.

the Oregon Short Line made a contract with a man named Eccles and his associates, who engaged to form a company and to build a railroad along the old grade for some seventy-five or eighty-five miles. Under this contract sixty-six miles were built,[1] when construction ceased. About 1900 the matter was taken up by parties in Los Angeles, and Senator Clark became interested.[2] Land for a terminal was applied for in Salt Lake City and support asked for on the ground that the new line would be independent of the Southern Pacific.[3] By June, 1901, the San Pedro Company had raised $2,501,600, had obtained in the neighborhood of one hundred acres of land in Los Angeles favorably situated for terminals, and through the Los Angeles Terminal Railway Company had acquired about three miles of water front on the Bay of San Pedro, California.[4] One hundred and ten miles of the proposed main line from Los Angeles toward Salt Lake had been surveyed, ninety miles located, and right of way for thirty miles secured.[5] These vigorous efforts led to renewed activity on the part of the Union Pacific system, altho the original reasons for construction had lost force after its consolidation with the Southern Pacific lines. An option on the Eccles mileage (Utah and Pacific Company) was taken up, forty-two miles were built on towards Caliente, surveys were made towards Los Angeles, and litigation was begun with the Clark interests over the right of way through certain narrow passes through which both roads, if constructed, would have to run. It was from the beginning evident that two railroads through this district would not pay,[6] and the San Pedro

[1] P. 2435 ff. Eccles.

[2] P. 2460 Love.

[3] P. 3280 Clark.

[4] P. 3282 ff. Gibbon.

[5] Pp. 3278–3279 Clark.

[6] P. 2569 Kearns.

Company came to terms. In July, 1902, the Clark people sold to the Harriman lines an undivided half interest in the enterprise and agreed to the trusteeing of all the stock for ten years. Directors were to be equally divided between the two parties and various traffic and other agreements effectually prevented independent action as to rates.

The abortive attempt to control the Northern Pacific in 1901 needs only a bare reference. It had no result except to provide the Union Pacific abundantly with funds that could be used in future expansion. It should be remarked, however, that an interest in the Santa Fe was acquired in 1906, at a time of active rivalry between Santa Fe and Southern Pacific interests. The Santa Fe was then and still is the only road connecting San Francisco and Chicago by its own rails (except for a few miles in California where Southern Pacific tracks are used), and the only one of importance apart from the Harriman lines that penetrates the Southwest. In 1901 projects for Santa Fe extension in Arizona were under discussion. The company had just bought the stock and second mortgage bonds of the Santa Fe, Prescott, and Phoenix, a road running from Ash Fork on the Santa Fe main line south and southeast through Prescott to Phoenix. The country was not a rich one, but it had mineral possibilities, and expected a considerable agricultural development through irrigation. The president of the last-named company was one Frank Murphy, whom Mr. Morawetz, chairman of the executive committee of the Santa Fe, characterized as an enthusiastic son of Arizona.[1] Mr. Murphy was anxious that the Phoenix road should be extended south to Benson, where connection could be made with the El Paso and South-

[1] P. 1139 Morawetz.

western and a direct and independent outlet secured to the Gulf over this road and the Texas and Pacific from El Paso. It is obvious that this was of great importance to the Santa Fe, Prescott, and Phoenix so long as it remained independent. To the Santa Fe it was less vital. Traffic which could be taken on Atchison rails clear to Chicago was scarce likely to be given to another road at Benson, and altho part of the proposed road might have been used in a new low grade route through Southern Arizona and New Mexico to Deming — a route parallel with the Santa Fe's existing line and about one hundred and fifty miles longer — the construction of this route was not immediately in prospect. For these reasons, and because the local business of the extension did not look attractive, Mr. Morawetz refused to undertake it.[1] Mr. Murphy promptly organized a new company, the Phoenix and Eastern, made surveys, secured rights of way, and negotiated for a trackage contract with the El Paso and Southwestern.[2] Seeing that the road was to be built, the Santa Fe decided that it had better build it itself, and arranged in 1902 for construction as far as Dudleyville, half-way.[3] Shortly after surveys were made for an eastern extension from Dudleyville toward the Santa Fe tracks at Deming, and a new road was incorporated to build through the Gila canyon.[4]

The construction south of Phoenix the Southern Pacific regarded as an invasion of its territory. Harriman graders occupied a canyon above the line of the Phoenix and Eastern and proceeded to blast down rocks upon their rival's right of way.[5] The next step

[1] P. 1133 Morawetz.

[2] P. 1133 Morawetz.

[3] P. 1162 Douglas.

[4] P. 5069 Murphy.

[5] P. 1025 Murphy.

was to ask the Santa Fe to sell to the Southern Pacific the constructed part of the Phoenix and Eastern, and to retire from the country in which it lay.[1] Mr. Morawetz was not unwilling to make the sale. He seized the opportunity, however, to secure certain advantages in northern California. In the summer of 1902, as he explained in his testimony, the Atchison had concluded that it would be desirable to extend its system north of San Francisco Bay. Negotiations were begun for the purchase of the stock of the California and Northwestern, but this stock was sold to Southern Pacific interests before the Atchison purchase was completed.[2] Thereupon the Atchison bought the stock of a short line running out of Eureka, about one hundred miles north of San Francisco. This railroad did a considerable passenger business and handled a good deal of lumber, but connected with San Francisco only by boat.[3] It was intended to build south to San Francisco,[4] but the construction would have been expensive, and the volume of business probably insufficient to support both a Southern Pacific and a Santa Fe line. The dispute in Arizona gave Mr. Morawetz the idea of attaching to his consent to sell the Phoenix and Eastern (at cost and interest) the conditions that Mr. Harriman sell him at the same time a half interest in the coast lines north of San Francisco Bay. Mr. Harriman at first refused,[5] but later agreed. As part of the same arrangement the Southern Pacific agreed to have built a low grade line between Phoenix and Deming and the Santa Fe a line between Phoenix and Mojave — each company to have trackage rights over the other's road on mutually satisfactory terms upon request.[6]

[1] P. 1134 Morawetz.
[2] P. 509 Payson.
[3] P. 1136 Morawetz.
[4] P. 1134 Morawetz.
[5] P. 512 Payson.
[6] P. 974 Deming.

It was while the relations between the Santa Fe and the Southern Pacific were thus subjects of dispute that Mr. Harriman informed Mr. Morawetz that he and some of his associates (Wm. Rockefeller, H. H. Rogers, Jas. Stillman, and Kuhn, Loeb and Company) [1] had purchased 300,000 shares of Atchison stock and desired representation on the Board of Directors. He called attention to the general desirability of establishing a better relationship between railroads, and offered Mr. Morawetz a place on the executive committee of the Southern Pacific; but stated that the stock referred to had been bought as a private investment. Mr. Morawetz declined to consider a change in the directorate until the differences between the Santa Fe and the Harriman lines should have been adjusted. By February, 1905, an agreement had been reached, and Messrs. Rogers and Frick were elected to the Atchison Board.[2] The bulk of the holdings of Mr. Harriman and his associates had been sold by the latter part of 1906, but by this time the Oregon Short Line had purchased 100,000 Atchison shares; and Rogers and Frick retained their positions. The stock owned by the Oregon Short Line was finally sold in 1909.[3]

These were the bare facts on which the Government was to base its charge of violation of the law. They raised, it will be observed, three questions. (1) Was there competition between the companies named before the incidents occurred which were mentioned in the complaint? (2) Did these transactions do away with competition, assuming that it had existed? (3) If there had been competition, and it had ceased, was its suppression brought about by illegal means? Unless all three questions could be answered in the

[1] P. 1105 Schiff. [2] P. 1138 Morawetz. [3] P. 4722 Kahn.

affirmative, the Government's case would fail. In the eyes of Mr. Wickersham and his associates the facts cited constituted cumulative evidence of a conspiracy to restrain and monopolize interstate and foreign commerce, carried through by competing railroads and by certain stockholders therein. On the other hand, the defendants interpreted the facts as isolated transactions, each justified by the special circumstances of the case, and totally devoid in intent and result of any semblance of restraint of trade or attempted monopoly.

In analyzing the evidence presented, we may first direct our attention to the matter which the Government offered as proof of the existence of competition between the Southern and the Union Pacific railroads, including with the latter the Oregon Short Line and Oregon Railroad and Navigation Companies. This evidence was vital, and was given more attention in briefs and testimony than any other portion of the case. The material was divided into seven parts: —

1. Competition as to traffic between the Atlantic seaboard and the Pacific coast. The Government examined no less than seventy witnesses — shippers, Southern Pacific employees and ex-employees, and representatives of independent railroad lines. Among those who testified were Mr. Hawley, for nineteen years eastern agent of the Southern Pacific and after that a financier of prominence; Messrs. Stubbs, Spence, and Munroe of the traffic department of the Southern Pacific; Mr. Paul Morton, one time Vice-President of the Equitable Life Assurance Company, Mr. Jeffery, President of the Denver and Rio Grande, and Mr. Hannaford, in charge of traffic on the Northern Pacific. Substantially all of these witnesses testified that traffic from the Atlantic seaboard could move

to the Pacific coast either via the Morgan Steamship line to New Orleans and thence over the Sunset Route of the Southern Pacific to San Francisco, or via the trunk lines and their connections to Omaha, thence over the Union Pacific to Ogden and over the Central Pacific to the Coast. Altho the Southern Pacific was interested in both of these routes, yet it secured all the revenue from freight moving via the Sunset Route and only 30.1% of the total revenue from freight delivered to it by the Union Pacific at Ogden. In consequence, it used its best efforts to influence freight to travel by the southern line. The Government showed by the evidence of shippers that freight was actually solicited in competition between the two Pacific companies. The Southern Pacific, it appeared, took traffic at New York rates from as far west as Buffalo and Pittsburg, not including those cities, and from as far south as Norfolk.[1] Not only this, but the Union Pacific was not altogether restricted to the route via Ogden. By diverting freight at Granger and sending it north to Portland over the Oregon Short Line and the Oregon Railroad and Navigation Company, it could affect the transcontinental rate in two ways. In the first place, it was physically possible for traffic to move from Portland to San Francisco by boat; and in the second place, a mere reduction in the rate to Portland compelled a cut to every Pacific terminal point in order to maintain these different cities in the same relative position for the distribution of eastern goods. As Mr. Stubbs expressed it: "Let the rate be cut on the Great Northern, and it goes down to the Gulf of California."[2]

Mention may also be made in this connection of the route via the Isthmus of Panama, in which the Southern

[1] P. 841 Hawley.

[2] P. 2005 Stubbs.

Pacific had an interest by virtue of its control of a steamship line from San Francisco to Panama. The business was not large, but in so far as any moved this way it was in competition with the rail lines via Ogden.

2. Competition as to traffic between points in the interior of the country and the Pacific Coast. Much the same was true of the traffic from points between Buffalo and Pittsburg and the Mississippi River that held for the business from further east. It was plainly impracticable to send them through New York, but goods could move to the Gulf and thence via the Sunset Route to California, or they could go by way of Ogden. The Illinois Central was the most important road in this territory, and Mr. Fish, its president, testified that the Union Pacific and the Sunset Route competed for traffic originating anywhere in Illinois Central territory as actively as any two roads that were in the business.[1] Rates were the same either way, the competition being in service and solicitation.[2]

3. Competition as to traffic between the Atlantic seaboard and Colorado and Utah common points. A good many sheep wintered in the desert west of Salt Lake, and in the spring moved to the summer ranges in Idaho where they were sheared. The railroad near which the shearing took place secured the outbound wool, and for this reason the Union Pacific, Southern Pacific, and Rio Grande Western offered every attraction possible to influence the movement of the flocks. The Union Pacific, for instance, at one time paid a head tax which Wyoming levied on all sheep brought into that State.[3] The Oregon Short Line purchased salt on behalf of the sheep owners, carried it to Idaho, and only collected back the pur-

[1] Pp. 1109–1110 Fish. [2] P. 2189 Stubbs. [3] P. 2391 Babcock.

chase price at the time the salt was delivered.[1] In the same way there was competition in respect to cattle and horses which wintered in southern Idaho and northern Nevada and moved east in the spring.[2] In return for the wool, cattle, hides, etc., shipped east, there were brought in shipments of miscellaneous merchandise, dry goods, machinery, and the like. When the Union Pacific handled the business it moved from New York to Norfolk or Newport News, thence by rail to Omaha and over the Union Pacific lines to destination. When the Southern Pacific took it, the freight went by Southern Pacific steamers to New Orleans or Galveston, and thence over railroads controlled by the company to Fort Worth, Texas, where it was given to connecting lines for delivery at destination. The rate was the same either way, but the rivalry between soliciting agencies was intense.[3]

4. Competition as to traffic between Portland and Utah and Colorado common points, including certain points in Nevada. Portland enjoys a fairly direct route over the Oregon Railroad and Navigation Company's tracks to Huntington, and from there over the Oregon Short Line to Granger, a few miles east of Ogden. The Southern Pacific runs south from Portland to Roseville, near Sacramento, and thence east through California, Nevada, and Utah to Ogden. The distance over the one route is 945.3 miles and over the other 1487.3. The Roseville route has nearly twice the rise and fall of the Huntington road, while the curvature also is greater. A calculation by Mr. Kruttschnitt estimated that the direct line haul was equivalent to 3498 miles of straight level track, but that the haul via Roseville was equivalent to 6164 such miles.[4] The evidence nevertheless showed that

[1] P. 2491 Love.

[2] P. 2661 McBride.

[3] Pp. 2358-2371 McCarthy.

[4] P. 4141 Kruttschnitt.

some business, especially lumber, had moved the long way around before 1901. Traffic also had moved via the Oregon Short Line and Central Pacific to points as far west of Ogden as Wells, Nevada. How much all this amounted to was not clearly shown — at best it was probably not a great deal. After the consolidation of the Union Pacific and Southern Pacific in 1902 the Shasta Route took out its through rates with the Oregon Railroad and Navigation Company, and withdrew from the competition.

5. Competition as to traffic between San Francisco and Portland. Some of the business between these towns used the same Southern Pacific rails through Oregon and California that were traversed by business going to Utah and Nevada. About two-thirds of it, however, came by water.[1] Mr. Stubbs, traffic director of the Harriman lines, testified as follows: —

> The steamship service between San Francisco and Portland is better than the rail service, with this single exception — that the rail service is daily while the steamship service is probably only once in five days. The points of delivery and taking at San Francisco and at Portland favor the steamship line. In the early opening of the Shasta Route, we had some ambition to load our trains north-bound, and made some attempts to get the business, but found that we absolutely could not take the business as against the steamship lines, but besides this, is the fact that there were outside competitors with the Oregon Railroad and Navigation; other steamship lines, and steam schooners, that made the rates not only unremunerative, but they were unstable; so, after several attempts to join in that business, we quit.[2]

The evidence showed clearly that for perhaps one and a half years after 1894, the railroad and steamship lines competed actively for the local coast-wise business, both freight and passenger. Rates fell to one dollar a ton by water and $1.50 a ton by rail for

[1] P. 3953–3954 Stubbs.

[2] P. 3935 Stubbs.

the 653 miles between San Francisco and Portland.[1] Passenger fares were $2.50 and $5.00 on the boat,[2] and $5.00 and $10.00 by rail. The boat rate included meals and berth, for which the regular charge was $6.00, so that it was actually cheaper to pay fare than to ride on a pass. After the war was over a differential was put in of 6c. a 100 pounds LCL and 3c. a 100 pounds CL between the steamers and the rail lines[3]—all this before 1901. Competition in service continued,[4] and large sums are still spent in advertising.[5]

6. Competition for traffic between San Francisco and points in Montana, Idaho, etc. Wine, dried fruit, sugar, beans, and other California products distributed from San Francisco could pass north to Portland and Seattle via the Shasta Route or by boat, and could go from there east over the Oregon Railroad and Navigation and Oregon Short Line, over the Great Northern, or over the Northern Pacific. Or it could go east from San Francisco by the Central Pacific to Ogden, and thence north over the Oregon Short Line into Montana and Idaho. The business was not large, but it was competed for actively.

7. Competition as to traffic between various ports in the Orient and points east of the Missouri River in the United States. The Southern Pacific Company bought a majority of the stock of the Pacific Mail in the fall of 1902,[6] and used the ships of that company for traffic from San Francisco to Yokohama, Kobe, Nagasaki, Shanghai, Hong Kong, and sometimes Amoy.[7] The greater part of the business moved via the Union and Central Pacific; some of it went west over the

[1] P. 2901 Connor.
[2] P. 2632 O'Reilly.
[3] P. 2666 Ward.
[4] Pp. 2757–2758 Hurlburt.
[5] P. 3980 Stubbs.
[6] P. 1666 Schwerin.
[7] P. 1657 Schwerin.

Sunset Route — in all, the rail lines west of the Missouri earned $63,382.86 on Oriental traffic moving through San Francisco in October, 1906.[1] On the other hand, the Oregon Railroad and Navigation Company owned all the stock of the Portland and Asiatic Company, running between Portland and substantially the same ports of call that the Pacific Mail reached in China and Japan. This company was the successor of three lines which in turn had failed to make the business through Portland pay,[2] and seems to have been established to assist the Oregon Railroad and Navigation in competition for the export business in grain and flour.[3] Ninety per cent of the traffic was westbound.[4] Of course the steamship company was eager for traffic, and competed in connection with the Oregon Railroad and Navigation, Oregon Short Line, and Union Pacific with the route formed by the Central Pacific and the Union Pacific, at least prior to 1901.

The voluminous evidence thus summarized showed that active competition had existed of almost every conceivable kind. There had been competition of parallel routes between the same termini, of parallel or roundabout routes between different termini, of roundabout routes entirely controlled by the competing lines, of routes in which the Union and Southern Pacific were links only in chains of connecting and independent roads, and finally there had been competition in cases where one competitor had to rely upon the other for a greater or less proportion of the haul.

There were certain considerations, nevertheless, which weakened the Government's case. Altho the carriers had competed, yet counsel were able to show

[1] P. 1872 Stubbs, Exhibit 119.

[2] P. 4850 Campbell.

[3] P. 4851 Ibid.

[4] Pp. 4851–4852 Ibid.

only in sporadic instances that rates had been cut. The most important through business which the Union Pacific had possessed had been the transcontinental traffic to and from the Pacific Coast, and the connection with which it had interchanged most business was the Southern Pacific. Now the Rio Grande Western reached as far west as Ogden, and it was at all times possible for the Southern Pacific to divert traffic this way. In consequence the Union Pacific had not dared to push competition very far. The Oregon Short Line and the Oregon Railroad and Navigation Company had remained practically unused for transcontinental business. Mr. Munroe, Freight Traffic Manager of the Union Pacific, connected with the traffic department of that company since 1882, testified that the use of it would have been suicidal. Mr. Stubbs declared that in all his experience he had never known any business to be worked into or from California via the Portland gateway.[1] Even had the route been resorted to, movement by it would have been roundabout and difficult, and freight would have been necessarily distributed by the Southern Pacific from San Francisco. Restricted, therefore, to interchange with the Central Pacific at Ogden, the Union Pacific was unable to quote any through rates except with the consent of the very company which it was its interest to fight. Putting to one side the transcontinental business, the competitive traffic remaining was not large. Counsel for the carriers characterized it as incidental and insignificant, while the Government did not allege that the earnings on it exceeded three or four million dollars.

A somewhat different situation appears when we pass from the relations between the Southern Pacific

[1] P. 3906 Stubbs.

and the Union Pacific to the evidence touching the other railroads named in the complaint. It was undisputed that the Santa Fe, Great Northern, and Northern Pacific had competed directly with the Central, Union, and Southern Pacific. But this was not the whole story. In the Salt Lake case there had been rivalry in construction rather than in operation. Mr. Clark had desired to build a railroad; the Union Pacific had threatened to parallel it. There was no rate-cutting, for there were no rates; but the pressure of imminent financial loss had been as strong as tho a rate war had been well begun. *Mutatis mutandis*, the same was true of a part of the dealings between Mr. Harriman and the Santa Fe. The exchange of a right to buy a half interest in the Northwestern Pacific for the privilege of buying a road in New Mexico had put an end to projects of building which would have involved considerable extension and great loss in profits. The position of the two parties to the suit in respect to these operations was confused. The Government was disposed to term them attempts at monopoly and to distinguish them on this ground from competition in rates or service. Counsel for the carriers referred to them as independent bargains which benefited the parties that made them and did not injure the public. It is difficult nevertheless to see why the negotiations in both the Santa Fe and the San Pedro cases were not forms of competition, bearing the same relation to rate conflicts that the strategy of a military compaign bears to the tactics of a battle. Nor is this disproved by the fact that the logical result of the conflict was consolidation; for this is true of any sort of competition whatsoever.

The second step in the Government's proof was the establishment of the fact that the consolidations which

it charged had lessened competition. Mr. Wickersham had no difficulty in proving that the Union Pacific and Southern Pacific had consolidated the greater part of their soliciting agencies. The same officials were shown to be in general charge of traffic and operation on both roads. Business which formerly had been sought by the Sunset Route and the Harriman lines in competition was now routed so as to produce the most revenue for the system as a whole. So far as the San Pedro, Los Angeles, and Salt Lake Railroad was concerned, a traffic agreement had been entered into in 1902 which was a curiosity in railroad literature. The company had agreed to take no corporate action without the approval of Mr. Harriman. It was not to extend its lines north of the parallel of Salt Lake City; traffic was to be interchanged on a preferential basis with the Oregon Short Line and Union Pacific; the Salt Lake Company was to adopt Southern Pacific rates for its local traffic, and was to allow the Union Pacific and the Short Line to make through rates in both directions to and from points on its road.[1] In short, the Salt Lake road bound itself hand and foot. As for the Northern Pacific, the Northern Securities Company had been dissolved in 1905 and the old status of competition restored; but the Santa Fe was operating its lines in Northern California alternately with the Southern Pacific, and competitive construction in the Southwest had ceased. Besides this, an agreement had been entered into between the Southern Pacific and the Santa Fe dividing the citrus fruit traffic from Southern California, and another according to which cargoes from the Orient entering the port of San Francisco on steamships of the Pacific Mail were apportioned roughly in the pro-

[1] Pleadings, Exhibit A, pp. 24–27.

portion that the two railroads furnished outbound freight. Possibly because of this last-named arrangement, the Santa Fe had ceased to operate its line of steamships from San Diego.

The reply of the carriers on these points was technical. They urged, in the first place, quoting from Whitwell *v.* Continental Tobacco Company,[1] that "an attempt to monopolize a part of interstate commerce which promotes or but indirectly restricts competition therein, while its main purpose and chief effect are to increase the trade and foster the business of those who make it, was not intended to be made, and was not made, illegal by the second section." . . . The validity of this defense depended, of course, upon the acceptance of the assertion that only incidental restriction of competition had occurred,[2] and on proof that the merger of the Pacific railroads had, in fact, increased trade. Counsel put Mr. Kruttschnitt, chief operating official of the Harriman lines, on the stand, and drew from him a detailed and impressive list of the betterments and additions made since 1901, including the general statement that the Union and Southern Pacific together had spent $374,124,697.40 for these purposes in the eight years ending June 30, 1909. It was not a necessary conclusion that these expenditures had improved service or lowered rates; but the railroad officials testified positively that they had had such an effect, and the contrary was not satisfactorily established.

In the second place, the railroads maintained that, as a matter of law, ownership by one railroad of another's stock did not constitute control unless a clear majority were held. Control, said counsel, is a matter of *power*. A minority may direct the operation of a

[1] 125 Fed. Rep. 458.

[2] Pp. 175 ff. Brief.

railroad because the majority has confidence in it; but this is lawful. The Southern Pacific stockholders had confidence in Mr. Harriman and his associates, but they could have superseded them at any time. The argument deserved and was given little weight. Unless courts are to shut their eyes to the facts in their interpretation of the law, they must recognize that under any ordinary circumstances less than a majority of the stock of a company will enable the holder to determine its policy. The indifference of a certain proportion of stockholders, the fact that the officers of the company alone have access to the stock list, the regularity with which a substantial number of proxies may be had for the asking, all work to the same result. This was, in fact, admitted by the defendants' own witnesses.

This left as a final step in the argument the charge that the Union Pacific had employed an illegal method in suppressing competition. The situation was not free from difficulty. The carriers maintained that the essential transaction complained of had been a purchase of stock. This, they contended, was a matter subject only to State legislation. The acquisition or disposition of property is not commercial intercourse. "If any citizen should step into a broker's office on Broadway, New York, buy some stock in the Pennsylvania Railroad, pay for it, put the certificates in his pocket, and walk out, would he, or the broker, or the broker's principal, be engaged in commercial intercourse between nations and parts of nations? . . . Would a State corporation buying those certificates be in any different situation from an individual purchaser, if the State of its domicile had endowed it with corporate power to buy stock?"[1] But even

[1] Brief, Dunne, pp. 219-220.

tho purchases of stock were subject to Federal law they would violate no provisions of the Sherman Act. A purchase or sale is not a contract in restraint of trade, — for a contract is executory, implying something yet to be done; while a sale is executed, completed when made and because it is made. Nor is a contract in restraint of trade necessarily unlawful. It must be undue, that is, not entered into with the legitimate purpose of reasonably forwarding personal interest and developing trade. The same may be said of an attempt to monopolize. Every act of competition tends to drive competitors out of business, but competition is legal, in the absence of fraud or duress. It follows that an individual may buy out a competitor, and then another competitor, and so on, and a corporation may do the same thing. "It is evident," said Mr. Dunne's brief, — "*fraudulent, intimidating, coercive, and other like wrongful and unlawful* methods apart — that here we touch a fundamental principle of the freedom to buy and sell, of the legal right of the individual in respect to his own property." [1]

The case, as thus made up, was docketed on the Supreme Court calendar on October 9, 1911, and on the same day a transcript of the record was filed. On the following day, a motion to advance was submitted to the court; the motion was granted on October 23, and the case was assigned for hearing. Arguments were heard on April 19, 22, and 23, and the decision was handed down on December 2, a year and three weeks after proceedings had been begun before the final court of appeal.[2]

The opinion of the Supreme Court was remarkable for its brevity, for the sweeping terms in which the

[1] Brief, p. 285.

[2] No. 446. October Term, 1912. U. S. v. The U. P. RR. Co. et al.

law was laid down, and none the less for the exceptions in practice which it countenanced. As was to be expected, the main emphasis was laid upon the facts. Was there or was there not such competition between the parts of the Southern Pacific System that combination between them would tend to monopoly and thus be in violation of the law? "To compete," said the Court, "is to strive for something which another is actively seeking and wishes to gain." Did the Southern Pacific before 1901 strive for anything which the Union Pacific was actively seeking? To state the case in these terms was to compel the answer.

> The Southern Pacific, through its agents, advertisements and literature had undertaken to obtain transportation for its "Sunset" or southern route across the continent while the Union Pacific had endeavored in the same territory to have freight shipped by way of its own and connecting lines, thus securing for itself about 1,000 miles of the haul to the coast. . . .
>
> Competition between two such systems consists not only in making rates, which, so far as the shipper was concerned, the proof shows were by agreement fixed at the same figure whichever route was used . . . but includes the character of the service rendered, the accommodation of the shipper in handling and caring for freight, and the prompt recognition and adjustment of the shipper's claims. Advantages in these respects were the subjects of representation and the basis of solicitation by many active, opposing agencies. The maintenance of these by the rival companies promoted their business, and increased their revenues. The inducements to maintain these points of advantage — low rates, superiority of service and accommodation — did not remain the same in the hands of a single dominating and common ownership as it was when they were the subject of active promotion by competing owners whose success depended upon their accomplishment.

The Court replied to the suggestion that the traffic competed for was infinitesimal with the remark that tho relatively small it amounted in the aggregate to many millions of dollars. To the argument that tho physically able the Union Pacific had never dared to

compete with the Southern Pacific because of its dependency upon the latter for direct connection with the Pacific Coast, it answered, first, that it would have been detrimental to the Southern Pacific to have declined an arrangement for the carriage of freight received from the Union Pacific, and second, that the terms of the Pacific Railroad Acts of 1862 and 1864 forbade any discrimination in favor of the Denver and Rio Grande at Ogden.

Granted that substantial competition had existed before 1901 the conclusion that this competition had been restrained by the purchase on the part of the Union Pacific System of stock of the Southern Pacific Company, and that this restraint had been in violation of law followed unfailingly.

> The consolidation of two great competing systems of railroads engaged in interstate commerce by a transfer to one of a dominating stock interest in the other created a combination which restrains interstate commerce within the meaning of the statute because, in destroying or greatly abridging the free operation of competition theretofore existing, it tends to higher rates. It directly tends to less activity in furnishing the public with prompt adjustment of the demands of patrons for losses. . . .

The contention that a consolidation by stock purchase was not subject to Federal regulation the court brushed aside.

> Nor do we think it can make any difference that instead of resorting to a holding company, as was done in the Northern Securities case, the controlling interest in the stock of one corporation is transferred to the other. The domination and control, and the power to suppress competition, are acquired in the one case no less than in the other, and the resulting mischief, at which the statute was aimed, is equally effective whichever form is adopted.

On the other hand the Court dismissed the complaint against the Atchison, Topeka, and Santa Fe arising out of transactions in Arizona discussed in

connection with the Government's case. It also refused to take action in the matter of the San Pedro, Los Angeles, and Salt Lake. The Circuit Court had not believed that the Salt Lake road was naturally competitive with the Union or Southern Pacific, and had been able to find in the agreement with the Union Pacific only a laudable purpose to adjust differences and to construct a line of railroad between two points which would serve their joint interests as well as those of the public. The Santa Fe matter had been thrown out on technical grounds. In neither case did the Supreme Court see fit to disturb the conclusion of the court below.

The only point of general interest in this decision is the court's attitude toward the facts. The questions of law raised had been sufficiently covered in the Standard Oil and Tobacco decisions, and received merely brief, tho emphatic reassertion. It should be well understood now even by the legal profession that the ordinary property rights of the individual are limited by the Sherman Act, and cannot be pleaded as a defence against it. As the law stands, the only way of bringing about a material unification of interest between two railroads which are competing in interstate business appears to be the purchase by a natural person of control of each, and the importance of this is limited by the fact that individuals have but restricted means, and die in the end in spite of the best of care.

Several interesting observations, however, are suggested by the facts. This case is the first in which a thoro-going attempt has been made to trace the competitive relations between two great adjoining railroad systems. The result is likely to surprise the general public as it becomes known. Very little of

the competition between the Union and the Southern Pacific systems, it appears, was the direct struggle between parallel roads so familiar in early railroad history. The record abundantly shows that the Southern Pacific dominated its connection at Ogden by its ability to divert eastbound traffic at that point to the Denver and Rio Grande. The Court's statement that the Pacific Railroad Acts obliged the Central Pacific to afford equal advantages and facilities as to "rates, time and transportation" to all connections at Ogden may be accepted as an authoritative tho unexpected interpretation of the law; but it is too much to believe that the mere systematic diversion of unrouted traffic would not have involved a loss to the Union Pacific that no traffic manager would have suffered except under extraordinary circumstances. On the other hand, the more remote differences in interest appeared in practically every corner of the United States. It was shown that business from any point east of Omaha and New Orleans could make use of either the Union Pacific or the Southern Pacific, as the shipper desired, for stations in almost every State west of those cities. Nor was this the most striking fact brought out. Traffic from New York to Colorado moved via Southern Pacific steamers to New Orleans or Galveston, thence over railroads controlled by the Southern Pacific to Fort Worth, and from Fort Worth to destination it went over lines in which the Huntington carriers had no interest. Galveston is located very nearly on the meridian of Kansas City, and only that portion of the haul from New York by the southern route which lay west of Galveston, lay in any way parallel to it. Nevertheless, every single fraction of the southern route competed, in the sense in which the Supreme Court used the term, with every part

of every other conceivable route which connected the two terminal points. For example, the New York, Ontario, and Western operated between New York and Buffalo. It delivered business to the Wabash, which in turn gave it to the Union Pacific, or Rock Island, or Burlington, at Kansas City. It follows that the New York, Ontario, and Western was a competitor of the lines between Fort Worth and Denver, altho distant from them 1250 miles as the crow flies and connected by no lines over which it had control. In the same way, the Atchison, Topeka, and Santa Fe, running north from Fort Worth, competed with the Old Dominion Steamship Company, plying between New York and Norfolk, and the Chicago and Northwestern between Chicago and Omaha competed with the Louisville and Nashville between River Junction and New Orleans. Where one railroad formed part of two routes, it could even be a competitor of itself, as the Pennsylvania from Pittsburg to Chicago and from Pittsburg to St. Louis.

In view of this very broad conception of the nature of competition in rates and service, it is curious that the Supreme Court failed to recognize the existence of the "financial" or "diplomatic" competition which has been continuously in existence between the western groups of roads, a competition no whit less important than that upon which the Court laid stress. This took such forms as the threat of new construction, the readiness to divert traffic in one section to secure favors in another, or the purchase of huge blocks of a competitor's securities as a demonstration of financial strength. It is not to be supposed, of course, that this sort of struggle is limited to western lines. Great railroads are like great nations, in that open warfare is the crudest weapon which they employ. The larger

the company the more important the influence which it can exert in indirect ways. It takes a good deal of credulity to believe anything other than that the Clark interests undertook the construction of an independent railroad between Los Angeles and Salt Lake, which the Harriman people contrived to dominate in order to forestall competition which might have ensued. The story of the relations between the Santa Fe and the Southern Pacific likewise is full of illustrations of the larger kind of competition. Similar facts appear in the recent New Haven-Grand Trunk negotiations, or in the agreements between the Hill and Harriman lines in the Northwest. Indeed, the most serious objection to big business merely because it is big is to be found in the growth of the financial power of the single units. Sooner or later the courts will have to recognize the problem.

Another point of interest is suggested by the fact that this merger case is the first in which dissolution will provide evidence of the effect upon operating efficiency of the division of a great business into two or more parts. The information was not available in the case of the Standard Oil and American Tobacco companies because they were not public service corporations. It was not useful in the Northern Securities case because the units in that merger were not closely enough combined. But for the Harriman lines we shall have detailed sets of records, prepared on a uniform basis and open to all under the Interstate Commerce Law, and relating to a company which has made a more systematic attempt to secure the full economies of large scale production than any other in the United States. Thus at the present time purchases for the whole system are made by the Director of Purchases, Mr. Thorne. Standards in construction

and operation have been established after consideration and discussion by the officers from general superintendent up. The best brains in the accounting department have worked in harmony for improvements in method. By means of a car pool the Harriman equipment is utilized wherever the local demand is greatest. A carefully planned course of instruction offers to promising employees the best general railroad training in the country, while every effort is made by correspondence instruction to encourage thought and develop interest among subordinates. If the greater decentralization resulting from splitting the system in two compensates for the loss in efficiency in other ways, an important precedent will have been created. Some at least among the members of the organization itself expect this to be the result. A contrary opinion is indicated by a decline in the price of Union Pacific common stock, after the decision, of 19 points in 10 days. It is, of course, to be remembered that many of the achievements of the old administration will be enjoyed as a legacy by the new; so that conclusions cannot safely be drawn until after the lapse of several years.

In conclusion, a word may be said about the nature of the decree. The Supreme Court had no decree of the lower court before it, since the Government suit had been dismissed by that tribunal. It confined itself, therefore, to general instructions to the Court below. These were in brief : —

> The decree to be entered in the District Court shall provide an injunction against the right to vote the stock while in the ownership or control of the Union Pacific Company, or any corporation owned by it or while held by any corporation or person for the Union Pacific Company, and forbid any transfer or deposit thereof in such wise as to continue its control, and shall provide an injunction against the payment of dividends upon such stock while thus

held, except to a receiver to be appointed by the District Court to collect and hold such dividends until disposed of by the decree of the Court.

Plans were to be presented to the District Court within three months, failing which the said Court should proceed by receivership and sale if necessary. Nothing in the Supreme Court's instructions was to be construed as preventing the Union Pacific from retaining the Central Pacific connection from Ogden to San Francisco, if desired. A later ruling has held that a distribution or sale of Southern Pacific shares now held by the Oregon Short Line to the stockholders of the Union Pacific will not satisfy the Law. Arrangements for the purchase of the Central Pacific stock by the Union Pacific or one of its subsidiaries can readily be made, provided that the Central Pacific stock collateral bonds, secured by the stock of the same company, are paid off. With the Central Pacific would go the lines of ferries connecting Oakland with San Francisco. The Southern Pacific stock itself is pledged under the Oregon Short Line refunding 4's to the extent of $108,000,000; but under the terms of the mortgage, the company is entitled to withdraw any particular collateral on deposit at the rate at which bonds were originally issued against the same, provided that securities of railroads or car companies be substituted. The Union Pacific owned $244,073,200 of unpledged stock and bonds of companies within the system at the date of its last annual report, so the requirements of the indenture can be easily complied with.

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FRANKFORT-ON-THE-MAIN: A STUDY IN PRUSSIAN COMMUNAL FIANNCE

SUMMARY

Scope of municipal activity in Prussia, 329. — Limitations imposed by the Kommunalabgabengesetz, 330. — The municipal industries of Frankfort, 332. — Difficulty of estimating profits, 335. — Water works, 335. — Street-car system, 337. — Electric light and power plant, 341. — Harbors, 343. — The Verbindungs- und Hafenbahn, 348. — The canalisation system, 349. — Removal of garbage, 350. — Stockyards and slaughter houses, 351. — Public markets and baths, 351. — Pawnshop, 352. — Savings bank, 353. — Department of Supplies, 355. — Burials by the city (Friedhofs-Amt), 355. — The Special Fund for City Landed Property, 357. — The Erbbaudarlehenskasse, 361. — The Strassenneubaukasse, 361. — General Administration of Landed Properties, 363. — Funded and unfunded debt, 364. — Productive and unproductive debts, 365. — Percentage distribution of the funded debt, 366. — Growth of indebtedness, 368. — Special building funds, 368. — Other funds, 369. — Statistics of receipts and expenditures, 371. — Per capita taxation, 372.

PART II

AFTER the taxes and fees the next source of income to be considered is that turned over to the city by the communal undertakings.[1] The German cities in general have gone very far in the way of municipalizing such public service corporations as water and gas works, electric light and power plants, slaughter houses, to a lesser extent, street-car lines, and other municipal industries of diverse description. In Prussia, the communities as self-governing bodies have been given a large liberty in the extension of their operations to all sorts of industrial and social activities. According to a statement of the Oberverwaltungsgericht, the

[1] The net balances transferred to the treasury amounted to 2,059,700 m. (1904–05), rising to 4,028,000 m. (1909–10) and falling to 3,627,000 m. (1910–11).

community is permitted to bring within the field of its activity all that furthers the welfare of the whole body of its citizens or the material interests and spiritual development of individuals. It can establish, take over the management of, or lend assistance to institutions performing such public services.[1] To be sure, the state can control community activities in so far as such activities necessitate the contraction of debts (and they usually do), for all contemplated loans must be approved by designated state officials. But that the state has not used its power to the repression of communal activity is best evidenced by the existing high degree of development in the German cities. Indeed, one can say that they have been permitted an extraordinary freedom in the carrying out of their plans, so that many German municipalities today present advanced types of so-called communal socialism and have become subjects of international attention. In the front rank of such cities is to be found Frankfort-on-the-Main sometimes dubbed the "Queen of Municipal Socialism." For purposes of the present study, these numerous undertakings are discussed primarily from the point of view of their relation to and effect upon the municipal finances. It goes without saying that the financial result is only one of many factors to be considered in determining the value of a particular institution. Notwithstanding which, it is a factor which plays a great and frequently the determining rôle, where the question arises as to the expediency of a further extension of social activity by the communities.

A further limitation found in the K. A. G. anent the industrial (gewerbliche) undertakings of the com-

[1] Der Gemeinde-Sozialismus und seine gesetzlichen Schranken im preussischen Kommunalrecht, S. Genzmer, Senatspräsident des Oberverwaltungsgericht (Archiv für offentliches Recht, Tübingen, 1909).

munities, provides that they shall be so managed that the income at least covers the total additional expenditures of which they are the cause, including interest and amortisation payments on the capital invested.[1] Exceptions to this rule are, however, permissible, to the extent that a particular undertaking at the same time subserves a public interest which would otherwise not be satisfied. There is some room for debate concerning the necessity of providing for the extinction of the so-called "productive" debts (contracted to provide capital for municipal industries, profit making enterprises). It is sometimes contended that if interest payments are met and depreciation charges allowed for, the citizens can regard any surplus as a disposable source of income which can be used to lighten the burden of present taxation. Considering, however, the rapid extension of the field of municipal activity and the tremendous growth of indebtedness, it is likely that, were no provision made for the extinction of these debts, they would assume such proportions as to constitute a real danger. For, however far-seeing the administration, however careful the provision made to prevent depreciation, there is no guarantee that existing productive investments may not become unproductive through the introduction of new industrial methods or systems. Innumerable contingencies may, in the course of time, arise to turn a productive debt into an unproductive one, burdening future generations of citizens for the sake of benefits enjoyed in the past.

In the classification of communal undertakings it is usual to distinguish those branches managed primarily with the view of achieving substantial

[1] K. A. G., § 3.

net earnings from the other institutions in whose management the effort to obtain financial returns, altho not always lost sight of, is yet subordinated to the desire to confer certain social services upon the citizens. The classification presents considerable difficulty at times, when the two aims are found combined in such fashion that neither one can be considered paramount. Nevertheless, it is a classification not without practical significance, for in individual cases, a decision as to whether a particular undertaking belongs to this or to that category determines very largely the policy pursued in the fixation of tariffs.[1]

The three communal undertakings of Frankfort-on-the-Main which turn into the city treasury a substantial balance are the water works, the electricity plant and the street-car system. Yet even these undertakings are not managed with the same singleness of purpose that one would expect to find in the case of private corporations. Other than financial considerations play an important, and perhaps, in the case of the water works an even more decisive rôle. As a pure and abundant water supply is a social necessity of first importance, a city might well deem it wise to own its works, even tho no net earnings were achieved. In Frankfort water rates are graded in accordance with rental values, with exemptions for the lowest rentals, the desire to encourage consumption by the less well-to-do being recognized as of prime importance. Even the street-car system is not managed solely with intent to fill the city treasury, as will be apparent on later examination. In the case of the electricity works, the management can, no doubt, proceed fairly unhampered by considerations of social expediency.

[1] For general review cf. "Die Betriebe der Stadt F. a. M.," A. Busch, Schriften des Vereins für Socialpolitik, 129 (1–3), 1908–09.

The other communal undertakings, altho usually bringing in returns sufficient to meet interest and amortisation payments on the capital outlay, and occasionally returning a net balance above these amounts, are, nevertheless, not managed as similar private capitalistic enterprises would be, not even in those cases where they compete with or have superseded private enterprises. Their efficiency cannot, therefore, be judged with reference to the financial gain obtained or the financial burden which their maintenance entails. For example, the establishment of city stock yards and slaughter houses with compulsory slaughtering and compulsory examination of the animals to be slaughtered is to be regarded as a police measure undertaken in the interests of the public health.[1] The fees are rather in the nature of taxes, than of payments in the private economic sense, for, where compulsion takes the place of voluntary payment, the community in its political capacity rather than as entrepreneur is functioning.[2] There are further included under communal undertakings functioning in the interests of the public health and comfort, the sewage (canalisation) system, the removal of garbage, the establishment of public baths, the maintenance of city markets. The city savings bank, designed to meet the needs of the poorer class of citizens, can be regarded as a philanthropic institution, and, in a smaller way, the city pawnshop likewise. Finally, the enormous outlays for harbor improve-

[1] Gemeindebeschluss betr. den Schlachthausswang (Bürgerbuch).

[2] On this point cf. J. Pfitzner, Die Entwicklung der kommunalen Schulden in Deutschland, p. 194.

It must be conceded that in all cases in which the city has acquired a monopoly, whether legal or actual, the payments for services become, theoretically speaking, taxes (fees). Whenever the inhabitants must take their water from the city water works, must obtain their electricity from the city plant, etc., the sums paid are as much fees as are the sums paid for the use of any other city institutions.

ments which have been made by the city have been incurred for purposes for which private capital would have been unavailable. However important these expenditures may be in furthering the general commercial and industrial interests of the city, they offer no prospects of an adequate direct return upon the sums invested for many years to come.

In the listing of the communal undertakings (Gemeindebetriebe) there is an element of arbitrariness which must not be lost sight of. If one wonders why canalisation and garbage removal should be included in the list any more than street paving or street cleaning, one also wonders why the cemetery management should be excluded from the list and put under "general administration," when, as is the case in Frankfort, the city is an ardent competitor of the local undertakers, furnishing coffins and funeral robes, as well as making other necessary arrangements for burials. The distinction is, indeed, in part a matter of book-keeping, depending upon whether or not the particular branch of city activity has a separate and independent account or is subordinated to some department of the general administration. But the segregation has a less superficial justification; there is usually some solid reason for separating these particular branches of city activity from the general administration. They all approach more or less nearly the character of private undertakings with definite sources of income and calculable expenditures. And all of them might conceivably be private capitalistic enterprises. If the distinctions are not always logically satisfying, the list can at any rate be provisionally accepted and later enlarged to include other municipal undertakings which seem properly to belong here.

Before proceeding to a more detailed discussion a further caution is necessary. The estimates of the profitableness of the investments from a financial standpoint can only be stated approximately. The various communal enterprises have many contracts with one another, the expenditures of one frequently constituting the income of another. In the case of such formal book-keeping transfers, it may well be that the sums credited and debited would be quite different were the contracting concerns under separate ownership. An analogous case is presented by the contracts between the constituent concerns belonging to the same trust. Their accounts are kept separate, their mutual contracts, deliveries, etc., are credited and debited to the particular establishments concerned; but there is, nevertheless, an element of arbitrariness about the proceeding which makes the results open to question. Then the amount carried to renewal funds is a very fluctuating quantity, sometimes sufficient to provide for improvements and extensions as well as renewals, or, again, if the financial need be greater than available revenues, the renewal funds may be robbed of their just quotas, and the proceeds transferred to the city treasury.

The city water works [1] have had expended upon them 40,053,000 m., of which 26,444,000 m. remained, April 1, 1911, a part of the city debt. Despite the fact that the management has to meet deficits incurred by the smaller works of the recently incorporated suburbs, the returns are considerable. In 1910–11, 683,500 m. were transferred to the account of the city treasury, while the total returns (including interest and amortisation payments) amounted to 2,697,600 m., or 6.7% of the

[1] Cf. Verwaltungsberichte and Haushaltspläne der Stadt.

amount of the capital invested. In 1907–08, among 77 German cities reporting, all of which with a few minor exceptions owned their water works, Frankfort, showed the largest absolute net returns (including interest and amortisation payments), exclusive of Berlin. Even Hamburg had a lesser net surplus from operations. The capital value of the plant was likewise far in excess of that of any city save Berlin; but the net income expressed as a percentage of the investment value was modest (at that time 7.1%) when compared with 16.6% for Essen, and returns variously in excess of 10% for 22 other cities.[1] The reason is no doubt to be found in the generous provision which Frankfort makes for securing an abundant water supply — the installation of meters being restricted with a view to encouraging the liberal use of water. In consequence, the per capita consumption is about 33⅓% greater than that for the city of Berlin.

Water for drinking is piped from springs in the nearby hills or (largely) from underground sources by pumping, while the water for non-drinking purposes is conveyed directly from the river. In Frankfort proper, the water intended for the use of factories and for industrial purposes in general is paid for by meter. In all other cases, the payment is regulated according to rental values.[2] For example, in the case of dwelling houses, for each 25 m. or part thereof of the yearly rental value, a water fee (Wassergeld) of 1 m. must be paid, with the proviso, however, that dwellings with a rental value of less than 250 m. remain free from the payment.[3] Here is an interesting illustration

[1] Statistisches Jahrbuch deutscher Städte, 1910, article Wasserversorgung, 1907–08, Statistisches Amt-Nürnberg.

[2] In the suburbs, payment according to meters is general.

[3] Wassergeld, Bürgerbuch, p. 314. For the coming year (1912–13), the rate has been increased $\frac{1}{16}$ for rentals (400–500 m.), $\frac{2}{16}$ for rentals (500–1,500 m.), $\frac{3}{16}$ for rentals (1,500–3,000 inclusive), ¼ for all higher rentals. Dwellings bringing less than 400 m. are, however, entirely freed from payment.

of a tariff, based rather on the ability to pay of those served, than on the amount of the service. However rude a measure rental values may be, they permit a certain large discrimination to be made. Special rates are made for rooms or apartments devoted to business or industrial purposes, where water for the conduct of operations is not necessary. A special tariff is also in force for water used in courts and gardens, the area being the basis of measurement. Where the meter system has been introduced, the price per cubic meter varies at different seasons of the year, with the amount consumed and with the character of the use.

Wherever the price of water is fixed, as is so largely the case in Frankfort, according to certain standards which give only a vague indication, if that, of the amount consumed, the water supply must needs be large. For the current year, indeed, the management has for the first time to pay a large sum, exceeding 800,000 m. in order to obtain additional supplies from a neighboring water works. As a result the anticipated net returns for 1912–13 have been considerably cut down, and the expediency of a rapid extension of the meter system has in consequence been discussed.

In 1898 Frankfort took possession of its street-car lines [1] (then a horse-car system) paying to the private company in control 2,230,000 m. and contracting to pay further until 1915 a yearly sum of 326,872 m., as compensation for the unexpired term for which the charter had to run. The city gave out the contract for electrification of the road, and upon its completion, April 1, 1900, took over the management definitively. The net returns, 1910–11, amounted to 1,147,300 m.

[1] Cf. Die Städtische Strassenbahn F. a. M. (Im Auftrage des Städtischen Elektrizitäts- und Bahnamtes aus Anlass der 10. Hauptversammlung des Vereins, etc.") Betriebsdirektion, 1905.

(exclusive of interest and amortisation payments). For the purpose of comparing the returns with those of private corporations, however, other payments which figure as expenses must be included under returns.[1]

For example, the contribution to the erstwhile Trambahngesellschaft	326,872 m.
a payment to the city Waldbahn (forest railway) to cover a deficit	156,111 m.
and the interest and amortisation payments	1,015,901 m.
constitute a total of	1,498,884 m.

to which must be added 1,147,340 m., the so-called net earnings, bringing the thus estimated earnings up to 2,646,200 m. or 12.9% of the amount of the capital invested (20,497,000 m.). The contributions to pension funds for employees (236,900 m.) may be regarded as a legitimate item of expense, altho the generous provision which is made disturbs the reckoning for comparative purposes, not only in this case, but in that of all other city enterprises. The payments or transfers growing out of contractual relations with other city departments introduce an additional element of uncertainty. The chief expense of operation, for example, is the payment made to the city electric works for the power needed; in 1910–11, 1,139,730 m. (delivered at the rate of 9 pf. per kilowatt hour).[2] The company likewise contributes 165,000 m. to street paving, repairs, street widening, etc., and 70,640 m. to the city treasury for its share of general bookkeeping expenses.

It has further to be considered that for a public corporation, the improvement and extension of the

[1] Cf. Verwaltungsbericht, 1910–11, and Haushaltsplan, 1912–13, p. 509 ff.

[2] Cf. Haushaltsplan, 1912–13, p. 509.

service is frequently emphasized to the detriment of the net returns. To illustrate: in 1910–11, the total income of the company was increased 515,000 m., but at the same time there was a diminution in net returns,[1] the cause being assigned to an increase in wages, together with shortening of the working period, to the acquisition of non-paying lines (needed to open up the suburban territory, always with the idea of relieving congestion in the older parts of the city), and finally to the great amount of travel at reduced rates. This last point deserves elaboration for several reasons. The fee system, as has been previously emphasized, is highly developed in German municipalities, and where possible and desirable, charges for the same services are frequently graded according to ability to pay. Frankfort, for instance, in addition to the normal tariff for its city railway, varying with the distance travelled, makes special rates for working men for the journey between their homes and places of employment.[2] The reductions are very considerable — about 50% below the normal price — and are only granted to independent, self-supporting workers on the presentation of evidence that the applicant has a yearly income under 2,000 m. The number of cards issued in 1910 was 495,255, as against 69,940 in 1904, the first year when the system was tried. Of the total number of passengers carried during the year, 30.6% travelled at these reduced rates. The tariff serves a double purpose, not only making a justifiable reduction for the sake of benefiting the laboring classes, but also

[1] The working expenses have risen from 55.4% (1904) of the income from operation to 59.5%; the gross earnings in 1904 were 2,452,000 m.; 1910, 3,631,000 m. The net earnings (1904) 983,156 m.; 1910, 1,147,340. The net earnings show a decided reduction, however, compared with the previous year, 1,609,600 m., and were smaller than for any year since 1905.

[2] So-called "weekly" cards are issued, good for a single journey on each work day before 7.30 A. M. or for going and returning after 4 P. M.

encouraging a more extensive distribution of population, helping to relieve congestion within the older districts, and thereby indirectly aiding the efforts which are being both publicly and privately made to provide cheaper and more healthful dwellings for the poorer citizens.

Of 81 German cities listed in the *Statistisches Jahrbuch deutscher Städte* (*Statistical Yearbook of the German Cities*) [1] 33 owned their street-car systems, among these being 8 cities with over 200,000 inhabitants. The financial condition of these lines was, however, at that time (1907–08) by no means so favorable as that of the Frankfort city railway, 13 companies even requiring dotations from the city treasuries. Frankfort, indeed, received the largest returns of any city listed (2,828,000 m.), altho its capital was then only one-third as great as that of the Dresden street railway company, with a return of only 2,740,000 m., and not quite so large as the capital investment of the street railway in Munich, with an income of 1,170,000 m. The returns here used for comparative purposes include not only the sums turned over to the city treasury, but also interest and amortisation payments, and the amounts transferred to renewal funds. The so-called "net" returns are too variously conceived to be available for purposes of comparison.[2] And in any case the statistics have to be taken with reservations. The street-car system of Cologne, for instance, debited with an advance of over 334,000 m. from the city treasury, is charged with contributions for the upkeep of the city streets (283,600 m.), and also burdened with the payment of a large sum to its predecessor, a private com-

[1] 17. Jahrgang, article Städtische Strassenbahnen im Jahre 1907, O. Landsberg.

[2] Dresden is credited with a net return of 300,000 m. in 1907; Munich, 472,000 m.; Frankfort, 1,280,000 m., 1907–08. Cf. Statistisches Jahrbuch deutscher Städte, 17. Jahrgang, pp. 626–627.

pany, amounting to 1,103,900 m. Excluding these extraordinary payments, the deficit is turned into a net balance. Making allowance for such inequalities, however, Frankfort stands, financially speaking, well at the head of those cities operating their own street railway systems.

The electricity works is another one of the municipally owned undertakings which brings a considerable sum into the city treasury.[1] The capital expenditure, 16,932,000 m., provided almost entirely through loans, has been in part repaid, to the amount of 2,179,000 m. (March 31, 1911).[2] The net returns transferred to the city treasury in 1910–11 totalled 2,898,800 m., and together with the interest and amortisation payments, the entire income was 3,774,700 m. or 22.2% of the amount of the capital outlay. It should be noted, however, that for the year in question no transfer was made to depreciation funds [3] — an omission which was due to the desire of the city to find new sources of revenue without increasing the taxes. This vicious practice constitutes one of the greatest dangers for the future solidity of communal undertakings, and cannot be too strongly deprecated.

The fees charged vary according to the purposes for which the electricity is used [4] (whether for illuminating purposes, or for electric motors, heating, etc.), and also with the amount consumed. The owners of meters likewise pay a monthly rent for their use, and a single payment for installation, usually 50 m., is also required.

[1] Cf. Verwaltungsberichte and Haushaltspläne.

[2] Electric works, No. 2 located in the suburb of Bockenheim has a capitalization of 2,885,000 m. (repaid 427,700 m.). It is able to meet interest and amortisation payments, and to turn an insignificant balance, 2,860 m., into the treasury.

[3] Nor are any sums written off for depreciation in 1911–12 and 1912–13.

[4] Gebührenordnung, Bürgerbuch (Elektrische Gebühren).

In the last year for which comparative statistics are available, 1907, Frankfort was again occupying a leading position among the 59 German cities reported as owning their own electric light and power plants.[1] The net returns from operating were slightly in excess of those for Munich, and far ahead of those of any other city, Cologne coming next with 1,583,000 m.[2] Notwithstanding this fact the price of electricity in Frankfort is rather below the usual rate charged elsewhere,[3] the most frequent charge for illuminating purposes being 60 pf. per kilowatt hour; for power, 20 pf. (in 30 cases), and frequently 25 pf. (11 cases). The delivery of power to the city railway at a rate of 9 pf. (2 cents) appears relatively rather low, altho a number of other cities charge at about the same rate. The sum with which the works are credited for street lighting is quite small, 85,000 m., as the city lighting is largely provided for by a private company: the Frankfort Gas Company. The city owns one small gas works in a recently incorporated suburb, Heddernheim. The returns had to be supplemented, 1910–11, by a small advance from the city treasury 17,770 m. in order to meet all outlays, including interest and amortisation.[4]

[1] Statistisches Jahrbuch deutscher Städte 17. Jahrgang: Beleuchtungswesen im Jahre 1907, E. Tretau, Direktor des statistischen Amtes Altona. Returns were received from 83 cities.

[2] These sums also include interest and amortisation payments and transfers to renewal funds.

[3] The Frankfort tariff for illuminating purposes: yearly consumption up to 3,000 kilowatt hours, at the rate of 50 pf.; for each succeeding 3,000 kilowatt hours, 40 pf. per kilowatt hour; for electric motors etc., 15 pf. per kilowatt hour in May, June, and July, and for the rest of the year, 25 pf. from 5 P.M. to 9 P.M.

[4] That Frankfort does not own the local gas works is due to the fact that the company supplying the city with gas has charter concessions, granted in the 50's, which do not expire until 1959. This private company pays the city for the privilege of using the streets (over 395,000 m.) and is in turn reimbursed for city lighting (409,000 m.). The city owns shares of the Frankfurter Gas Gesellschaft for which 6,450,000 m., have been expended. For the last purchase, 1910, a loan of 3,000,000 m. was obtained from the city savings bank.

Next in order of discussion, following the undertakings which turn over substantial net balances to the city treasury, comes the harbor management. Enormous expenditures have been made for harbor construction and for the acquisition and laying out of adjacent territory to be utilized for factory sites. No adequate return can be expected on the capital outlay for many years, altho it is hoped that the indirect financial gain to the city through its increased importance as a commercial shipping port will justify an outlay which makes a very substantial addition to an already large city debt.[1] Until 1886, when the Main was canalized, and opened for traffic from Frankfort to the Rhine, the city could only be reached by small boats, and was of no importance whatever as a river port. Since 1886, however, the river trade has grown steadily until Frankfort now ranks sixth among the Rhine ports. The chief imports, coming for the most part up the river from the Rhine, consist of coal, coke, etc. (50%). The grain trade is also of considerable magnitude — the grain imports, largely foreign, being transferred at Rotterdam to the Rhine vessels. Building materials are the only other important group of wares for the river trade. The existing West Harbor, completed at the same time that the canalisation of the Main was finished, represents an outlay of over 7,400,000 m., including expenditures for warehouses, a custom house, and equipment of various sorts,[2] but excluding the cost of the railway station. The warehouse fees, wharf dues, payments for the use of cranes, wagons, etc., bring in quite considerable sums,

[1] Der Osthafen im F. a. M., Denkschrift über die Erbauung eines neuen Handels- und Industriehafens im Osten der Stadt: Städtisches Tiefbauamt, 1907; cf. also Der neue Osthafen, by Magistratsbaurat H. Uhlfelder.

[2] Rechnei-Amt, Sonderabdruck, p. 40. Baurat Uhlfelder estimates the total cost of the West Harbor, together with the warehouses and custom house at about 12,000,000 m. I do not know the reason for the great discrepancy in the estimates.

so that the West Harbor management, in addition to meeting interest and amortisation payments, was credited with a very small balance, 13,000 m. (1910–11). The warehouses and custom house, for which separate accounts were carried, needed an advance of 86,770 m. in order to cover all outlays; but that advance was simply a book-keeping transfer from the harbor management proper to the other departments.

The facilities afforded by the West Harbor not being adequate to meet the needs of a growing commerce, the city was led to embark upon an ambitious new project, involving the construction of a second, "East" Harbor, and the purchase and laying out of an enormous adjacent territory, intended to serve as a site for factories and industrial establishments in general. Already, a large part of the contemplated plan has been executed. The lower East Harbor, running about 2.5 km. (somewhat over 1½ miles) eastward from the city, includes an open river harbor leading into which are two basins parallel with the Main. The tongue of land between the Main and the outermost basin is intended for industries needing immediate water connections (land here has already been taken up by milling establishments). Other locations on the water are variously intended as storage places for coal and other freight, and to the north of the inner basin are located the warehouses, dock-yards, etc. Cranes, wagons, all the machinery for loading and unloading have been installed by the city. Just back of the warehouse district is a section for factories without immediate water connection, but very accessible, nevertheless, as broad streets have been cut through, and shipping facilities provided.

The upper harbor district runs eastward from the lower for about 2 km. (1¼ miles). At present only the

western end of this upper region, away from the river, and the main connecting streets have been laid out. The harbor facilities proper are to include a basin parallel to the Main, from which three others will branch off. In general this district is intended for industrial sites, and provision is to be made, furthermore, for direct transfers between ships and railway. A section here is also without immediate water connection. The third main division, the Seckbach industrial district, extends northward away from the river, being connected with the harbor region by streets cut directly through, and having also railway connections. Only about two-thirds of this district has as yet been opened up.

The establishment of a harbor for industry (Industriehafen) is an interesting experiment,[1] and, viewed in one aspect, it is to be regarded as one of the many attempts which the city makes to cope with the difficulties connected with the high price of city lands. Among the reasons given in favor of the project in question [2] were the limited number of available factory sites in the city, and the high land values which make the establishment of new industries or the development of local branches, especially those needing much land, almost impossible. In many instances, furthermore, proper railway connections could not be had, while a situation near the water or in the neighborhood of quays was seldom obtainable. In the new district it is thought that the excellent water connections will mean a saving of expense in the case of raw materials brought by water, and the concentration of industry will also make possible a cheapening of water, light, and power provided for industrial purposes.

[1] Frankfort is not a pioneer in this instance. Similar projects have been carried out, first in Bremen, then in Strassburg, Karlsruhe, Kehl, Mainz, Düsseldorf, Mannheim, and Crefeld.

[2] Cf. Denkschrift, pp. 33–34.

Up to April, 1911, land to the amount of 360,493 qm. had been sold to 35 firms, the proceeds amounting to 9,095,800 m.,[1] an average per qm. of 25.3 m. Of these 35 firms, 4 were new enterprises and 9 were establishments moving into the city from elsewhere. A smaller number of rental contracts have been entered into, bringing a total income of only 61,100 m. Whether the optimistic views of the supporters of the East Harbor project, who anticipate an inflow of capital and a rapid settling of the new territory, will be confirmed remains to be seen. In certain official quarters, at any rate, the attitude is rather sceptical. There must be very urgent reasons at hand to induce outside firms, which can obtain good factory sites for 3 and 4 m. per qm. in other cities, to settle in the Frankfort harbor district, where the cheapest land brings 15 and 16 m., and the best locations on the water 40 m. On the other hand, there are distinct advantages to be got from the presence of a skilled and abundant labor supply, and from the favorable location of the city as a commercial center. And for those establishments operating with large capitals, for which the payment for land (or rentals) is a relatively unimportant item of expense, the higher prices need not always deter.

The estimated costs of the completed project (including land purchases and construction costs) are set at 72,000,000 m. Up to the present time, loans amounting to 20,500,000 m. have been used to defray the costs of land acquisition. Much of this land was already city property or belonged to city foundations, which had to be reimbursed for relinquishing their holdings. A much smaller part, but a part acquired on much harder

[1] Cf. Der Neue Osthafen, by Uhlfelder. During the past year about 700,000 m. was obtained through further sales. Terms: usually a first payment of 10% and thereafter 9 yearly payments, interest 4½%. Occasionally a 15 year term of payment is granted.

terms, naturally, belonged to private individuals. From these various sources, the Special Fund for City Real Estate (Spezialkasse für städtischen Grundbesitz), acting for the East Harbor management, acquired 3,304,300 qm. of land for the project. The debt for construction costs now amounts to 13,800,000 m., making a total outstanding indebtedness for the East Harbor account of 34,300,000 m. The amortisation payments on the debt for construction costs began in 1910, but in the case of the debt for land acquisitions, these payments do not begin until 1918 (15,000,000 m. loan, 1907) and 1922 (5,500,000 m. loan, 1911) respectively. The rate, however, is higher, 3½%, and the extinction of the debt will therefore be consummated in about the same time as if payments had been allowed for from the period of issue at the usual rate of 2%.[1]

The regulations for the East Harbor provide that it shall be managed as an independent undertaking.[2] The land, furthermore, is to be utilized either through sale or lease (the latter method being preferred),[3] the prices to be so fixed that the entire costs of construction and of land acquisition including loss of interest, shall as far as possible be covered. At present all returns from sales, all proceeds of rentals are transferred to a special interest and amortisation fund (Zinsen- und Tilgungsfonds), from which current interest and amortisation payments are to be defrayed. It was estimated that this fund on April 1, 1912, would amount to 11,924,000 m. With the current year, the East Harbor begins existence as an independent

[1] [Statement Stadtrat Dr. Bleicher.]

[2] Grundsätze für die wirtschaftliche Durchführung des Osthafenprojektes, Mar. 6, 1908. Cf. Bürgerbuch.

[3] As a matter of fact, most of the land taken up has been sold.

city enterprise [1] (Gemeindebetrieb), which must depend upon its own sources of revenue, or, where those are not sufficient, upon dotations from the city. Just so long as this independent standing was not recognized, there was danger that the deficits (which are likely to exist for years to come) would be recurrently met by fresh loans, instead of being defrayed out of ordinary sources of income. As it is, the advance from the city for the year 1912–13 is exceedingly meagre, 95,000 m. only; and the interest and amortisation payments on the debt will have to be taken in large part from the special fund, the contemplated withdrawals amounting to 1,378,000 m. How long this fund will prove adequate to meet the outlays for interest and amortisation depends entirely upon the amount and the rapidity of sales. In 1918, too, an increased burden will be put upon it to provide amortisation payments at the rate of $3\frac{1}{2}\%$ on the first debt of 15,000,000 m. A more liberal policy on the part of the city in making yearly advances, and consequently less heavy withdrawals from the fund, might, assuming fairly favorable conditions of sale, enable the latter to satisfy all demands. But in all probability the city will eventually be face to face with the necessity of meeting large deficits through much larger dotations, or else of incurring new debts to meet recurrent expenses.

The Verbindungs- und Hafenbahn, which has been greatly extended to meet the needs of the newly opened up district, is also city property. Altho the sum of 98,600 m. was obtained in 1910–11 from leasing the road to the state railway, the city had to meet a deficit, amounting, however, to only 45,900 m. No doubt with the increased traffic to be hoped for within the next few years, the deficit may be turned into a balance.

[1] Cf. Haushaltsplan, 1912–13, p. 560, and ibid., p. 369.

A communal undertaking recognized to be of great importance to the public health is the canalisation system. Indeed, save for the fact that the department is segregated from the general administration and has its own individual sources of income, it seems hardly to belong with the other listed communal enterprises. The system has involved a capital outlay of 26,547,000 m.,[1] the debt incurred having been in large part repaid, however, so that the department with the aid of a slight advance from the city, 88,700 m. (1910–11), can meet expenses and provide for interest and amortisation payments 487,000 m., on the still existing indebtedness 10,030,000 m.[2] (1910–11). The fees, amounting to 1,145,300 m. (1910–11), are a very considerable source of income.[3] For new sewage installations, the payment is 30 m. for each meter of street frontage, and since 1897, an additional sum (Zusatzgebühr) is raised varying according to the value of the buildings erected on the property concerned. In case of new installations, changes, improvements, etc., the payment follows at the rate of 1% of the building costs, exemptions being allowed for buildings with a value of less than 1,000 m. In addition to these extraordinary payments, every occupant of dwellings or rooms connected with the city canalisation has to make a yearly payment graded according to rentals. Dwellings with 300 m. rental value or less are freed from the payment. For shops and establishments whose owners are taxed on a lesser income than 6,000 m. one-half the rental payment may be made the basis of measurement, provided that that one-half equals at least

[1] Rechnei-Amt, p. 40, Sonderabdruck. Sewage systems of the suburbs, establishments for sewage purification and burning of refuse are included.

[2] Total indebtedness previously cancelled 5,497,800 m. to Apr. 1911, Haushaltsplan, 1912–13, p. 23.

[3] For Frankfort, exclusive of the suburbs, the fees amount to 962,700 m.

two-thirds of the amount of the taxable income of the person in question. Again comes an interesting illustration of the grading of fees to the advantage of the small households and of the less well-to-do trades people.

The sewage is purified by a mechanical process before being permitted to flow into the Main. The coarser particles are trapped and burned, the refuse serving as fuel for the generation of electric power, not only sufficient to meet the needs of the plant in question, but enough to bring in a return of 121,700 m. from outside sources, mainly the city water works, and more lately the water works and the electric power plant also.

The transport of garbage[1] is undertaken by the Fuhrparkverwaltung (hauling department), which also has charge of the removal of the refuse of industrial establishments, the city markets, the public schools, etc. The same department also does the necessary hauling for the various departments of the city administration which require its services, in this case payment being reckoned according to a fixed scale and the sums debited to the various departments and offices for which services are performed. The fees[2] for garbage transport are also graded according to rental values. For each 100 m. of rental or fraction thereof, 50 pf. is paid. Again the removal is free of charge, if the rentals are 300 m. or less. Likewise, reductions similar to those made in the case of sewage payments are granted in the case of business or industrial establishments whose owners are taxed on an income of less than 6,000 m.

[1] Verwaltungsbericht, Fuhrparkverwaltung.

[2] Gebührenordnung betr. Kehrichtabfuhr, cf. Bürgerbuch; also Addressbuch der Stadt.

Frankfort is one of the many German cities which are in possession of their own slaughter houses and stock yards,[1] and which require all slaughtering undertaken within the city limits to be done in the municipal slaughter houses. All meats, whether slaughtered within or without the city must be examined, unless the latter are labelled to show that they have been subjected to an approved examination; and imported meats must be sold separately in any case. The income consists largely of slaughter house fees,[2] cold-storage fees, a market fee for the animals brought to the stock yards, and fees for the examination of the stock. The returns from the stock yards and slaughter house are quite considerable, if interest and amortisation payments be considered, altho the sums turned into the city treasury are insignificant and frequently a deficit is recorded. The interest and amortisation payments amount to 512,700 m. for the slaughter house and stock yards together, which represent an investment value of 9,637,000 m. Adding thereto the slight net balances, the return on the capital investment for 1910–11 amounts to 5.6%.

The city markets return slight net gains, 25,540 m. (1910–11),[3] which, however, are assignable to the special markets and fairs held several times yearly, in accordance with ancient custom, in the open streets. The regular markets do not quite meet all expenses, including interest and amortisation payments on the debt, altho the deficit is very slight (21,075 m. in 1910–11), and as has been said, more than covered by the surplus

[1] Of 41 cities with over 100,000 inhabitants, 38 possessed their own slaughter houses (1908). Of 85 cities with a population of 50,000 or more, 81 owned their slaughter houses.

[2] Cf. Bekanntmachung betr. Gebührenerhebung auf dem Schlacht- und Viehhof, 16 Mar. 1901.

[3] Haushaltsplan, 1912–13.

from the special markets and fairs. The total returns, including interest and amortisation, amount to 134,740 m. and represent a very creditable return of 6.4% on a capital investment of 2,092,000 m., or, excluding the returns from the special fairs, 4.4%. The city owns four market halls, and collects fees for the use of the stands, which vary with the location, the area, and the days used, the fees being higher on Wednesday and Saturday.[1]

The public baths, containing swimming pools, shower baths, etc., a free river bathing resort, and suburban bath houses, have a deficit of 78,600 m. to show (1910–11), altho the income from fees (232,000 m.) is fairly large. The interest and amortisation payments on an investment sum of 1,404,052 m. amount to 64,800 m. The bath houses are therefore the only city enterprise[2] receiving an advance which exceeds in amount the sums required to meet the interest as well as the amortisation payments on the capital debt. However, since the public baths are designed primarily to meet the needs of the poorer citizens, the fees may properly be reduced below the value of the services paid for.

The city pawnshop, which dates from the beginning of the 18th century, is maintained with the purpose of protecting needy borrowers from excessive exactions.[3] The establishment does not always quite

[1] The city has only once arranged to sell food supplies directly to the people, as is frequently the case in other cities where attempts have been made to relieve the distress caused by high prices by selling fish, milk, etc., even by establishing communal bakeries. In the fall of 1911, however, the municipality bought potatoes which were sold at cost, with the result that the prices which had been extraordinarily high as the result of a bad season fell rapidly.

[2] I. e., exclusive of the Verbindungs- und Hafenbahn, which is operated by the Prussian State Railway.

[3] In addition to the city establishment, a number of licensed pawn-brokers are certified as being more reliable.

meet expenses, altho the attempt is made to obtain an income that will at least cover, but no more than cover, the outlays.[1] The working capital advanced by the city treasury amounted to 746,000 m. (1910–11) for which an interest payment of 25,178 m. was made.

The city savings bank [2] grew out of a small suburban institution which became the property of the city in 1895 when Bockenheim was incorporated. The operations of the bank were subsequently enlarged to include the whole city, and the deposits increased rapidly until in 1911 they reached the quite considerable sum of 28,288,000 m.[3] All gains are transferred to the reserve fund which amounted, April 1, 1911, to 515,000 m. The majority of the depositors are servants, day laborers, factory workers, apprentices, assistants, etc., and the size of the average deposit is small — 740 m. In the period from 1901–10 over 1,000 accounts averaged less than 60 m., and only 163 over 10,000 m. The largest number varied from 600 to 1,500 m. The number of separate accounts for the period averaged 34,860.[4]

A city savings bank has come to be a typical feature of German municipalities, and indeed serves a double purpose, as a secure investment for small savings and as a means of bringing together sums which would

[1] Ordnung für das Pfandhaus der Stadt F. a. M.

[2] Denkschrift aus Anlass des 50 jährigen Bestehens der Städtischen Sparkasse zu F. a. M. hrsg. vom Städtischen Sparkassen-Amt, Jan. 1910; also cf. Verwaltungsbericht, 1910–11.

[3] Interest paid despositors at present 3½%.

[4] An old-age savings fund has also been established in connection with the savings bank. It may be participated in by any depositor in the savings bank, not over 45, who belongs to the class of lower officials, trade and industrial assistants, laborers, servants living in Frankfort or working there the greater part of the year. The yearly income must not, however, exceed 2,000 m. When a depositor has saved 100 m., for example, one-half the interest payment may be credited to the old-age insurance fund, as a first payment. The savings bank contributes an additional sum (100% of late years) and further pays interest on the account at a higher rate than is usual. Nevertheless, the savings have hitherto been very small.

otherwise have been hoarded, and would have been unavailable, therefore, for purposes of capital investment. Where the cities use such funds to satisfy in part their own credit needs (either through sales of their bonds to the savings banks or by means of other borrowing operations) there is undoubtedly an element of danger present — a danger that these funds held in trust may be employed too freely in financing the operations of the trustee. In 1908, Dr. Most published a list of the creditors of those German cities having over 25,000 inhabitants. Of the bonds amounting to 2,143,172,000 m. the communal savings banks held 132,286,000 m. belonging to their own cities, 10,900,000 m. belonging to other cities, making 6.7% of the total. Of the other city loans (not funded) amounting to 550,900,000 m., the communal savings banks were credited with 142,580,000 m. (25.88%), loans made to their resepctive cities.[1] The Frankfort savings bank is not to any great extent a partner to this questionable practice, as the latest list of its security holdings does not include city bonds. It has, however, recently, 1910, made a 3,000,000 m. loan to the city, which has been used to purchase shares of the Frankfort Gas Company. This loan has taken the form of a funded debt, interest payments at 4%, and amortisation payments at the rate of 2%.

The bank is undoubtedly an important instrument in furthering the efforts which the city so vigorously makes to increase the facilities for cheap and comfortable living. On March 31, 1911, it had investments in mortgages amounting to 10,946,000 m., bringing in an average return of 4.2%. It is stated that, as usual, the policy followed involved primarily a preference of those lots having the smaller dwelling

[1] O. Most, Die Schuldenwirtschaft der deutschen Städte, Jena, 1909.

houses. Among the securities, too (Wertpapiere), amounting to 13,000,000 m., are mortgages of the Hellerhof and Franken-Allee building companies, totaling 825,000 m. These two companies are engaged in the erection of small dwellings, and it is the aim of the city to further the efforts of such building companies, as far as possible. Likewise in pursuit of this same policy, loans on mortgage security were granted to various building associations to the amount of 1,105,000 m.

The Department of Supplies (Materialienverwaltung) has charge of the ordering of building materials, provision of office supplies for the various departments, and purchase of the service uniforms of the employees of the street railway. In 1908, about 428 firms were engaged in the delivery of materials, the purchases amounting to about 2,520,000 m. Under this department also comes the work of repairing tools, wagons, and other implements belonging to the city. In addition to inspectors and office employees the department has about 110 to 120 laborers under its control.[1]

Altho the municipal undertaking department has not yet been segregated from the general administration, it can properly be counted among the community enterprises which have just been briefly described. In 1908 Frankfort took over the management of city burials, all operations even to the provision of coffins being arranged for. In nine other German cities, the undertaking business has been municipalized, in some cases to the exclusion of all private undertaking business. In Frankfort the transportation of the corpses is undertaken by the city alone, but other services may be performed by private undertakers. The fees are graded with reference to the income of

[1] Busch, "Gemeindebetriebe." Cf. previous reference.

the respective families of the deceased and five different classifications are made, the payment required of those families with incomes less than 1,500 m. being only one-fifth of the sum charged in those cases where the income exceeds 7,500 m. For the lowest grade, a further 50% reduction is made in case four persons are dependent on the income in question. The returns are more than sufficient to meet outlays: 411,500 m. against an expense to the city of 388,900 m. Of course no allowance is made for interest on the working capital, in this case, as the department belongs to the general city administration.

As Dr. Otto Most has pointed out, the so-called real estate funds (Grundstücksfonds) are rather to be regarded as furnishing working capital for a new branch of communal activity, than as funds assembled for the purpose of introducing stability into the city finances. In many instances, notably in Frankfort, the municipalities have become dealers in real estate on an enormous scale, working with an extensive capital provided largely from the proceeds of bond issues. According to the *Kommunales Jahrbuch*,[1] of 91 German cities with over 50,000 inhabitants, about 50 (in 1910) had established special funds to which city landed property, not serving any particular purpose, had been turned over. Not only do the cities hope thereby to obtain for themselves certain legitimate gains from the rise in real estate values brought about by communal activity, but they also desire to prevent an undue increase in the price of building lots for smaller dwellings. They wish, furthermore, to control the distribution of population, to relieve congestion, etc., to carry out city building plans with a minimum of friction.

[1] Kommunales Jahrbuch, 1911–12, p. 621.

In Frankfort a Spezialkasse für städtischen Grundbesitz (Special Fund for City Landed Property) was formed in 1897 to take over the management of certain landed holdings previously administered by the Stadtkämmerei, and also to carry out building plans for those sections of the city not yet laid out. To the fund were transferred all city lands in the unbuilt sections not already devoted to particular administrative purposes, as, for example, schools, cemeteries, etc. The land originally transferred covered an area of 955.9 acres and the holdings have been steadily increased by further transfers and by purchases until, April 1, 1911, the holdings amounted to 3,621 acres, or over 10% of the entire land area within the city limits. The land bought within the period 1897–1910 amounted to 3,186.3 acres; the sales during the same time, 1,156 acres.[1] The Spezialkasse was also intrusted with the acquisition of land for the purposes of the East Harbor project. These purchases, however, have now been completed, and the account closed.

In addition to the real estate originally transferred, estimated value 26,576,000 m., the Spezialkasse was provided (1898) with working capital from the proceeds of a loan of 6,000,000 m. Since that time the operations of the department have been increased enormously: the estimated value of the land-holdings being placed at 114,461,000 m.[2] the total value of all property controlled, March 31, 1911, at 123,000,000 m. The Spezialkasse has built up a relatively huge indebtedness within the period in question. In addition to purchases made with funds representing the proceeds

[1] Verwaltungsbericht, 1910–11, Stadtkämmerei Tabelle, 11.

[2] The property already built upon has a value of 6,400,000 m.; land ready for building, 17,100,000 m.; land shortly to be enclosed, 27,300,000 m.; agricultural land, 46,700,000 m.; land held for public purposes, 13,200,000 m.

of sales, further sums have been provided by a loan of 5,452,981 m. (1910) and a second loan of 15,241,772 m. (1910). There is, too, a large floating debt, representing balances owing for purchases made, amounting to 28,704,000 m.[1] Over 35,000,000 m. of the increase in the value of the land-holdings since 1897 is finally assignable to the fact that sales made during the period brought in a sum exceeding the inventory values of the property by that amount. At present, therefore, the Spezialkasse has property with an estimated value of 123,000,000 m. against an indebtedness amounting to 58,791,000 m.[2]

That the picture is not so cheerful as the statistics would make it appear, goes without saying. That real estate is worth what it happens to bring and that previous estimates are very largely matters of guess work, must be conceded. Furthermore, it is open to ask to what extent the large purchases made by the city have influenced real estate prices. And if the city, reversing its policy, begins to sell more than it buys, to what extent will that affect the inventoried values of its present holdings? The conviction is sometimes expressed that the policy of the city has made worse the conditions it was intended to improve, that its steady purchases have raised real estate prices in general, and that living conditions have been made more difficult through the resultant higher rentals.[3]

[1] Verwaltungsbericht: Rechnei-Amt: Städtische Schulden.

[2] Property alienated during the period (1897–1910) for streets and other public purposes, 6,140,000 m.; for schools, 5,250,000 m. in 1909.

[3] Frankfurter Zeitung, 9 Jan. 1912.

"In theory all sorts of miracles were to be anticipated from the communal land policy. It was believed speculation would be destroyed, and the community, assured of price dictation in the real estate market, would be able to solve the problem of living. In practice the opposite has occurred. A stagnation in real estate has resulted and prices are higher than before. So it happens that on the one hand we are suffocated with a too great landed property, while on the other hand, we suffer from a dearth of dwelling accommodations."

It would need an intimate knowledge of local conditions to enable one to express an independent judgment on this point. One would need to gauge the force of the other factors that make for higher prices. Even the city officials concede, however, that real estate prices have, to a certain extent, been raised through the city purchases. A rather extreme example in point is afforded by the purchases for the East Harbor account. The properties transferred by the city and the city foundations were taken over at the rate of 4.3 m. per qm. Private individuals were paid at the rate of 17 m. per qm., the plans of the city having, of course, become matters of public knowledge, and its position as bargainer therefore made difficult. The example is not conclusive — no doubt other reasons would account for some part of the price difference. But it was cited by a local official in illustration of the difficulties with which the city had generally to contend in making land purchases.

In view of the fact that the city owns lands covering an area equal to 46.3% of the territory within the city limits — 18.3% exclusive of the forest [1] — its dominant position in the real estate market is assured, especially as other peculiar local conditions have further limited private speculation; namely, the large land-holdings of rich private families who show no desire to sell. And in the case of smaller holdings, there exists a diffused ownership of scattered parcels, that could only be brought with difficulty under the ownership of a single person, and seldom on favorable terms.

Another important point for consideration is the ability of such a special fund to meet outlays, including

[1] For statistics upon which these computations are based, cf. Stadtkämmerei, Sonderabdruck, pp. 10 and 23.

It should be said that a relatively small proportion of these holdings are still outside the city limits.

interest and amortisation payments on its indebtedness, without recourse to fresh loans or demands on the tax payers. As a matter of fact, the Spezialkasse has been unable to do so—the income having fallen behind the expenses and necessitating a loan of 3,865,500 m. (1910–11). For 1911–12 and 1912–13 loans to meet deficits are estimated at 4,244,460 m. and 3,210,000 m. respectively.[1] Of course it is hoped that present deficits will be more than compensated by future advantageous sales. But nevertheless such a progressive debt increase, especially after it has attained such large absolute proportions, is not to be regarded with entire equanimity. The speculative risk involved has to be considered. As Professor Stein, Stadtrat in Frankfort, speaking anent the subject of the real estate operations of public corporate bodies, puts it: "Landed property is not only to a great degree non-liquid. It has (as the returns from tenants hardly come here into question) the unpleasant characteristic of secretly devouring interest on the capital investment. The growing interest can . . . swallow up profits and can force the communities sooner than one would believe, despite the foundation on a loan basis, either to withdraw sums from the regular income sources, thereby burdening the present generation whom it was hoped to spare, or else to sell their property. Easily, then, under stress of financial pressure comes a disposition to sell at great sacrifices. . . . The first principle of communal land policy must be to sell in order to purchase, to sell in order to keep the building activity at a steady pace, reflecting the growth of population and the extension of the city."[2]

[1] Haushaltsplan, 1912–13, p. 530.

[2] Die öffentlichen Körperschaften als Terrainunternehmer in der Bodenfrage, Stadtrat Prof. Dr. Stein, F. a. M., Vortrag, Leipzig, June, 1911, Wohnungskongress.

Through the medium of another special fund, the Erbbaudarlehenskasse, the city makes loans for buildings to be erected on city property.[1] The land is secured as a rule for a period of 61 years for a yearly interest payment of about 2½% of the land value. Then sums to cover the costs of building are loaned to 75% of the entire costs (90% in the case of city employees and teachers, for single family houses) at an interest rate of 4%, usually. At the end of the period for which the contract is made, the property again reverts to the city, which meantime holds mortgages on the buildings erected. Up to April 1, 1911, 139 contracts had been concluded; 13 with building associations, 102 with public officials and teachers, and 24 with private persons.[2] The entire sum loaned for building purposes amounted to 4,778,000 m., the working capital being provided from the proceeds of a city loan (400,000 m.) and through sums obtained from the city savings bank, the Spezialkasse (loan of 3,236,000 m.) and a widows' insurance fund. The Erbbaudarlehenskasse has also invested in the shares of two building companies engaged in the construction of small dwellings. As a result of operations in 1910–11, a very small balance was achieved in addition to the payment of interest on the working capital, and amortisation payments on the loan.

The Strassenneubaukasse[3] (fund for the construction of new streets), founded in 1893, has charge of the construction of new, and the broadening of existing streets in the older city district. Here a great work

[1] Vergebung städtisches Geländes im Erbbaurecht (1901), Normalbestimmungen. Cf. Bürgerbuch.

[2] Stadtkämmerei, pp. 7 and 20, Sonderabdruck.

[3] Cf. Bürgerbuch, Spezialkasse zur Durchführung neuer Strassenzüge in der Altstadt (1893).

has been accomplished in the tearing down of unsanitary buildings, and in the opening up of congested districts. The costs of the project have been defrayed out of loans obtained from the city, the total outstanding indebtedness (including balances owing of 3,308,600 m.) amounting to 24,886,000 m. (April 1, 1911). In addition a fixed sum from ordinary income is transferred by the city to the account of this fund, 170,000 m., and the returns from the transfer tax to 1½% of the purchase price of the property sold.[1] There is also a certain amount of income obtained from rents, sales of property, etc., for, after the building plans had been completed, the fund was left in control of real estate valued at more than 19,000,000 m. Some of the property is built upon, and is temporarily rented, altho it is designed eventually to tear down many of these buildings as unfit. Meanwhile, an unbuilt area of nearly 7 acres, value 11,341,000 m., has yet to be disposed of, and its utilization presents a sufficiently difficult problem for the present. Much of this property was destined for business purposes, shops, etc., as it is in an unsuitable location for dwellings. But the shopkeepers, too, are moving farther west, and only in a few instances has the land been taken up. The city has begun slowly to build on its own account, but the outlook is not extraordinarily favorable, and no easy task is anticipated.[2]

Altho as an independent fund the Strassenneubaukasse is charged with interest and amortisation payments on its debt, it is not to be expected that it should be self-supporting. In addition to the current transfers already mentioned, a further deficit, 835,000 m., was met from the proceeds of loans, 1910–

[1] Stadtkämmerei, Sonderabdruck, pp. 21, 22.

[2] [Statement Oberbürgermeister Adickes.]

11, and further deficits are similarly provided for in 1911–12 and 1912–13.[1]

The Allgemeine Grundbesitzverwaltung or Stadtkämmerei (General Administration of Landed Properties) is managed as a branch of the general city administration, altho it, too, might very well have been made into a separate department. In addition to having control of the administrative and other public buildings, the department has under its supervision rented buildings valued at over 30,000,000 m. Some idea of the importance of the city as a landlord is to be had, if it be mentioned that, in 1908, 269 apartments were rented out to city employees at rentals about 30% below the normal price for similar accommodations.[2] The returns are not given separately and it is unfortunately impossible to estimate the interest received on the capital invested in these buildings. However, the results for one model apartment house recently built in the suburb of Bockenheim have been obtained. The building cost 300,000 m., the land is valued at 104,310 m., the rentals amount to 21,500 m. Deducting 20% of that amount for repairs and general upkeep, the interest on the capital investment amounts to 4%. In 1907–08, the last year for which comparative statistics were available, the rentals from city owned dwelling houses alone were stated to amount to 820,200 m., very nearly twice as much as the returns for Munich, the city of next importance in this respect.

The city forest, a large part of which was acquired in the 14th century, is also under the control of the Stadtkämmerei. It covers an area of 8,459 a. (mostly wooded), and the returns, obtained largely from the sale of lumber, bring in a net income of 153,250 m.[3]

[1] Haushaltsplan, 1912–13, p. 524.

[2] Busch, "Gemeindebetriebe" authority for this statement.

[3] Verwaltungsbericht and Haushaltsplan.

There has next to be considered an extraordinary source of income without which a vast number of communal activities could never be developed: namely, the sums obtained from loans, which generally take the form of bond issues. Contemplated communal loans must, as has been previously stated, receive the approval of the central government, and judging from the heavy indebtedness of the local political units, that approval has not been difficult to secure in the past. For the future, however, as a result of the rapidly increasing debt-burden, the supervising authorities have determined upon a severer policy. It has also been decided to raise the amortisation quotas; the repayment of loans contracted for so-called unproductive purposes must be provided for at the rate of 1¼% at the very least, and for the productive loans 2% is the lower limit.

Frankfort has an extraordinarily large debt for a city of its size — somewhat over 288,000,000 m. for a population of 414,576, of which 234,562,800 m. represents the funded debt.[1] The rest is largely outstanding balances and mortgage indebtedness of the general administration for city lands and of the Spezialkasse. This very large unfunded debt is peculiar to Frankfort, as in other municipalities the amount of the floating debts is quite unimportant. In 1907, when the city had a debt of 222,947,700 m. (population 355,312) the per capita indebtedness, 627 m., was far greater than that of any other German city, Freiburg following with 527 m., Charlottenburg, 484 m., Wiesbaden, 463 m., and Munich, 431 m.[2] Since that time the per capita indebtedness has risen to 694 m.

[1] Cf. Verwaltungsbericht, 1910–11 (Rechnei-amt) and also Haushaltsplan.

[2] Pfitzner, p. 8 ff. Statistics include unfunded as well as funded debt.

(1911), despite the incorporation of suburbs materially increasing the population of the city (in April, 1910).[1]

The wealthier the city, the easier the terms upon which loans can be obtained, and the more heavily, therefore, can it afford to draw upon its credit resources. That Frankfort has taken advantage of its excellent repute as a borrower to spare its tax payers is evident from the fact that other cities with well-developed municipal activities of a similar sort, and with higher tax rates, have a smaller per capita indebtedness. The question, however, as to whether a corporate body is or is not heavily debt-burdened depends after all upon the disposition which has been made of the proceeds of the loans obtained. When these sums have been invested in such a way that the interest and the required amortisation payments can be met (not to mention the cases in which net surpluses are returned), the debt is, of course, no burden and may be a source of additional income. According to the official statistics, the funded debt of Frankfort to the amount of 171,866,000 m. is so invested that it can be drawn on to meet the interest and amortisation payments on the loans in question, leaving an unproductive debt of 62,696,000 m.[2] for which interest and amortisation payments amounting to 3,328,000 m. have to be met out of current income.[3] The statement, tho formally correct is misleading, for in certain cases what is taken from one pocket is, so to speak, merely transferred to another. The Spezialkasse, for example, tho responsible for interest and amortisation

[1] In 1911 a further special loan (not yet issued, however) was authorised for land purchases to the amount of 32,500,000 m.

The prospective funded debt as estimated for Mar. 31, 1912: 241,673,000 m.

[2] Of this sum, 3,676,300 m., had not been issued up to Mar. 31, 1911. Its issue was contemplated, however, during the ensuing year.

[3] Rechnei-Amt, p. 34, Sonderabdruck.

payments on its large funded debt has recurrent deficits in excess of these sums, which have to be met by loans. The Strassenneubaukasse likewise receives annual dotations in excess of the sums for which it is debited for interest and amortisation payments. Of the 121,465,000 m. of the funded loan invested in communal undertakings (Gemeindebetriebe) not all is so placed that interest and amortisation payments as well as all other expenses can be covered. The case of the East Harbor, for example, has been discussed. No doubt it will some day prove a productive investment, but for the present it is not so. A number of other undertakings are likewise not entirely self-supporting, it will be remembered, altho in general it can be said that these are rather unimportant exceptions to the rule.[1] Of the remaining funded debt, a large part, nearly 38,000,000 m., was incurred for the construction of administrative buildings, public schools, hospitals, almshouses, museums, and churches. The cemeteries, with a capital indebtedness of 2,755,000 m., bring in substantial returns and the debts incurred for the building of houses to be rented, 3,402,000 m., included under the general administration, are productively invested, altho it is unlikely that amortisation as well as interest payments could be covered by the returns.

The percentage distribution of the funded debt as computed from statistics given in the latest Verwaltungsbericht are rather interesting, altho for comparative purposes they are not as illuminating as might be expected, especially in the case of the communal industries. The amount of the indebtedness of the

[1] The advance to the canalisation department is insignificant. The gas works of Heddernheim would more than meet interest payments without a dotation. The Verbindungs- und Hafenbahn, however, receives an advance nearly equal in amount to the interest and amortisation payments. The bathing establishments require an advance exceeding the amount of the interest and amortisation payments.

latter depends very much upon the date of the establishment of the industry. The statistics are, however, given for what they are worth. On April 1, 1911 the water works accounted for 11.3% of the funded debt; the electricity works were responsible for 7.3%; the street railway, 8.4%; canalisation, 4.7%; and slaughter house and stock yards, 3.36%. The debt resting on the harbors was naturally large, because of the recently incurred outlay for the East Harbor — over 17.7%. The debts incurred for " city building," the carrying through of new streets, and the re-building of old ones (excluding the operations of the Spezialkasse) were also very large: 12% of the total. The funded debt of the Spezialkasse, together with the debts incurred by the general administration for land purchases, reached 19% (to say nothing of the very large unfunded debt). The expenditures for school buildings constituted 7.1% of the public debt, for administration buildings 3.5%, for almshouses and hospitals 3.2%.

It is not to be denied that the " unproductive debt," using the term in the narrow business sense, is absolutely large, and that, furthermore, some part of the expenditures, especially those incurred for building operations, might better have been met out of current income or out of funds built up by regular annual contributions. For such expenditures, tho extraordinary in one sense of the word, are as a matter of fact recurrent in the sense that in growing and progressive communities similar outlays have to be periodically made, and can be confidently anticipated. If the city wishes to avoid steadily increasing its debt, other sources of revenue must be found for some of these expenditures. The existing provisions for amortisation, altho leading to a more rapid extinction of the debt than is usual in

many cities, nevertheless hold out no present hopes that the cancellation of existing debts is likely to proceed, *pari passu* with the creation of new ones.[1] In 1910–11, the last year for which full statistics are available, over 17,641,000 m. in new loans was issued, the proceeds to the amount of 10,493,000 m. going to the municipal industries; 3,865,500 m. to the Spezialkasse; the rest for various purposes. During the year in question, amortisation payments did not quite amount to 4,900,000 m. During the past year a loan increase of over 16,000,000 m. had as offset amortisation payments amounting to 5,538,000 m. However excellent its standing, a city cannot indefinitely increase its obligations. Indeed, the extensive exploitation of their credit on the part of the German municipalities brings a complaint from the cities themselves that capital is increasingly difficult to obtain, the general rate of interest now being 4%, whereas earlier 3½% was usual.[2] On the other hand the business world at large sees in the municipalities dangerous competitors for the capital desired to further the expanding industrial and commercial interests of the country.[3]

Frankfort has established a number of special building funds which are designed to provide the means of defraying construction costs without constant recourse to loan issues. If this policy continues to be

[1] Cf. Verwaltungsbericht. The amortisation rates for the earlier loans, 1%, have been raised of late years, usually to 1½%, more lately, to 2%, and for a special loan for land purchases, 1907, 3½%.

[2] Naturally other more general causes have influenced the rise in interest rates.

[3] Frankfort maintains a city debt registry (Schuldbuch). On the relinquishment of the city securities held by investors, the city will take charge of interest payments, etc. A small fee, 50 pf. is required for each 1,000 m. The payment of interest follows either directly or through payment into savings accounts, the Reichsbank, post-office or other designated depository. Strict secrecy is observed concerning the amount of individual investments. At the end of March, 1911, 954 accounts with over 31,000,000 m., were recorded.

vigorously pursued, some part of the "unproductive" debt can for the future be kept within bounds if not actually reduced in amount. The general building fund, for example (Allgemeine Baufonds), and the building fund for the common (Volks-) and middle schools receive dotations from ordinary current revenues exclusively: 672,365 m. and 1,500,000 m. respectively in 1910–11.[1] On the other hand the hospital building fund (Krankenhausbaufonds), and the building fund for continuation, trade, and higher schools (Baufonds für Fortbildungs-, gewerbliche und höhere Schulen), altho receiving sums obtained from ordinary sources of revenue (aus dem Ordinarium), depend for the most part upon the proceeds of loan issues. The former fund, for example, 1910–11, received 1,287,450 m. from loans; only 211,180 m. from the "Ordinarium"; the latter fund obtained 3,286,900 m. (loans) and 572,365 m. (Ordinarium).[2] Among the minor funds, the Fund for Public Improvement and Education (Volksbildungsfonds) and the Fund for the Futherance of Trade, Art, and Science, also receive small yearly dotations, fixed at 100,000 m. and 150,000 m. respectively.

Another very important fund is the renewal and reserve fund (Erneuerungs- und Reservefonds) belonging to the communal industries. As a result of financial need, the fund has lately been less well endowed, in some cases no transfers whatever being made to this account. The result is that the size of the fund (as estimated 1912), 9,702,000 m., is less than it was April 1, 1911, 9,988,000 m.,[3] and still less than 3 years prior to that time when it amounted to 10,100,000 m.

[1] Haushaltsplan, 1912–13, pp. 69–540.

[2] Ibid.

[3] Cf. "Anmerkungen," p. 540, Haushaltsplan, 1912–13.

The falling off in the renewal funds is matter for serious comment. Where such funds are insufficient, the evil effects upon the city finances are plain: either an unusually heavy drain upon current revenues to meet a suddenly increased need, or else fresh loans to meet expenditures that should have been defrayed out of income. The other alternative, depreciation of the existing capital investment would mean an economic loss out of all proportion to any slight monetary saving. As to whether or not the fund is at present adequate, is a matter for expert decision. As the magistracy states in a preface to the provisional city budget for 1912–13: "It remains to be seen in the course of the following year, to what extent the amount of these sums stands in agreement with the amount written off for depreciation on the investment capital, taking into consideration the amount of the loan capital actually repaid. For the time being a further weakening of this reserve is not to be recommended." In the same preface it is also said: "In the case of the management of particular undertakings, a reduction of the originally contemplated, calculated transfers to the renewal funds has already taken place. In the case of the electricity plant, whose renewal funds show a falling off against 1907, no transfers are made. The same is true of the water works. To the renewal fund of the street-car system, which, despite the opening up of many new lines, is less than it was in 1907, are only made good those expenditures which have been defrayed out of it." [1]

Lastly to the Equalization Fund (Ausgleichsfonds) are transferred unexpected surpluses, while from it unforeseen deficits are met. The fund has, however,

[1] Entwurf des Haushaltsplanes der Stadt, 1912–13. Vortrag betr. den Haushaltsplan für das Rechnungsjahr, 1912.

suffered the natural fate of such institutions, and, as a result of having been turned to account to meet anticipated instead of accidental deficits, it has declined almost to the vanishing point.

Of the 25,567,000 m. required to meet the ordinary financial needs of the general city administration, 21,255,000 m. was covered by taxes (1910–11), while 3,617,000 m. represented balances turned over by the communal undertakings.[1] The ordinary expenditures can only be briefly enumerated, for any one branch of the general administration affords in itself material for an extensive study. The expense incurred for schools is by far the most important single item, as is usually the case in the larger cities: 7,422,000 m. (including sums transferred to the building funds). Next in importance come the expenditures for poor relief, hospitals, and philanthropic undertakings, the advances amounting to over 3,800,000 m. The Tiefbauamt, which has charge of street inspection, street cleaning, bridges, etc., required a sum of 3,120,000 m. (1910–11), and the Hochbauamt, which includes the fire department, building inspection, city gardening, is next in importance with 2,198,000 m.[2] Of late years the expenditures for schools, police, sick and poor relief have increased enormously. Between 1895 and 1910, the increase for schools amounted to 309.98%; for police, 282%; for poor relief, 280.94%; for hospitals, 405.67%. The proceeds of the income tax, on the other hand, from which these expenses are, in general, to be met have only risen 194.4% during the

[1] Approximately 550,000 m. was contributed by the Grundbesitzverwaltung and the Cemetery management. The total receipts from all sources, 1910–11, were 50,910,000 m.; the total expenditures, 50,818,000 m.

[2] The statistics given are based on the estimates for 1910–11. They do not represent the total expenditures of the several departments, but the uncovered expenditure which have to be met from the current income of the city.

same period, altho the tax rate has been increased 42.8%.

Considering the variety and extent of the municipal activities of the city, the amount demanded in taxes is not great: 24,563,000 m. for a population of 414,576, (1910–11). It needs to be remembered, however, that the sum is considerably greater for German conditions than it would be for American, and it gives, furthermore, in all probability, the largest per capita taxation (59.2 m.) for the whole of Germany.[1] On the other hand, these statistics afford no good idea of the relative burden of taxation, as the wealth of Frankfort enables it to secure more liberal returns from persons of large income and from the propertied classes to the disburdening of the poorer elements.

The policy which is being pursued at present is so markedly one of expansion — ever increasing taxation, and ever growing indebtedness, that, altho the city has much to show for its efforts, on the one hand, it will take time to find out how much it has to pay, on the other hand. Upon the success or failure of its land policy, and of its great harbor scheme, a vast deal depends. If the large indebtedness incurred on these accounts proves to have been wisely contracted, the city may be proud. Meantime fresh loan issues defer the day of reckoning.

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[1] Statistisches Jahrbuch deutscher Städte, 17. Jahrgang, p. 362. In 1907–08, Frankfort, with a per capita tax of 54.75 m., led the 80 German cities for which statistics were given.

NOTES AND MEMORANDA

ELECTRICAL RATES IN THE OPINIONS OF THE WISCONSIN COMMISSION

THE subject of electrical rates has not received from economists the attention its intrinsic interest warrants. The greater public importance of railroad rates explains why the theory of that subject has been worked first. Meanwhile electrical engineers have been developing ideas and terms applicable to the rate problem of the central-station electrical industry. These ideas deserve to be incorporated into the stock of economic thought. The opinions of the Wisconsin Commission in various electrical rate cases will do much to bring about this result. The following comment on some of them is intended as much to emphasize their interest for students of economics and the importance of the principles underlying them, as it is to criticize some implications that the writer believes to be open to objection.

Two of the terms commonly used perhaps require definition here. The "load factor" is the ratio of average to maximum demand during a given period of time. In the discussion of rates the term "demand" is commonly used in referring to the maximum demand of a consumer. Frequently, also, connected load or some definite fraction of it is treated as equivalent to "demand" in this sense. The "diversity factor" is an index of the dispersion of the maximum demands of the parts of a system or of the individuals constituting a group of consumers, and it may be defined as the ratio of the sum of the maximum demands of component parts to the maximum demand of a system. These and related ideas have elsewhere been discussed by

the writer in some detail, with reference to the bases and conditions of their application in the theory of rates.[1]

The familiar "fixed" and "variable" costs of general economic discussion appear in the opinions of the Wisconsin Commission as "capacity" and "output" costs. "Consumer" costs, or those incident to the company's dealings with the consumer as a separate commercial entity (*e. g.*, those due to the installation and reading of meters and the collection of bills), are also sometimes given a separate place in the determination of the form of the rate schedule. It is in connection with the division of costs between capacity and output, however, that load factors are of interest. An electrical company generates its current at the instant of demand, hence it would seem to be just to put upon the consumer a "demand" charge proportioned to the capacity required by his greatest consumption, and in addition a kilowatt-hour charge of so much per unit of current consumed. This view is accepted by the Wisconsin Commission and its rate schedules are framed accordingly.

In the case of the Menominee and Marinette Light & Traction Co.[2] (decided August 3, 1909), the Commission enters into a full consideration of the general principles at the foundation of electrical rates. The section on "Some facts that should be considered in rate making"[3] is an admirable discussion of these principles as relating to long and short hours of use (the load factor) and is open to criticism only in that it makes no mention or use of the diversity factor and thus in effect assumes that the maximum demand of all users will occur at the same time. Nor does there appear to be in any part of the opinion evidence of appreciation for this factor in cost. Capacity and output expense are carefully separated. The problem of apportioning the undivided costs receives much attention. The

[1] "Load Factors and Rates," in the Report of the New York Public Service Commission for the First District for 1910, vol. iv (Statistics of Gas and Electric Companies).

[2] Opinions and Decisions of the Railroad Commission of the State of Wisconsin, 3 W. R. C. R. 778.

[3] Ibid., 822.

local separation which the case calls for is not of general interest. In the apportionment for the different branches of the business and between different classes of consumers it would have been gratifying to find more evidence that the Commissioners were aware of the properly differential incidence of most overhead and fixed charges and of the inadvisability of assuming that, because cost accounting may require some apportionment of such charges by the use of averages, the actual cost can be said to vary according to the results so obtained.

In the Madison Gas & Electric case [1] (decided March 8, 1910), there is a section on the "Form of rate schedule" [2] in which the Commission discusses the readiness-to-serve system of charges. Mr. Doherty, the principal champion of this plan, who happened to be the president of the respondent company, was a witness in the case. The Commission approves the principles in question, and in effect applies them in this and other decisions. Their essence is a separate computation and separate charge for "consumer" and for "demand" or "readiness-to-serve" costs. In the more general part of the opinion there is no reference to the diversity factor, but in the detailed discussion of rate schedules it is taken into account. The street-railway customer of the lighting company is conceded to be entitled to a specially low rate on this ground and also because of the "additional-business" principle. This last is a recognition, under another name, of the crucial importance of prime cost. The opinion is not one-sided, even when it leans most strongly toward readiness-to-serve ideas. But, in common with Mr. Doherty, it does appear to make one fundamental mistake. It assumes that fixed charges can be apportioned in such a way as to be treated quite like separate costs, and thus misses the point of proper differentiation in rates. Incidentally its rate schedules tend to a troublesome complexity.

The decision in the above case prescribes rates for incandescent service for residences and businesses as follows:

[1] 4 W. R. C. R. 501. [2] Ibid., 656.

For current used equivalent to or less than 30 hours' use per month of the active connected load, 14 cents net per kw. hr.; for additional current within the next 60 hours' use, 8.5 cents; for all current in excess of 90 hours' use per month of the active connected load, 5 cents; with a minimum bill of $1.00 per month. By a decision of July 5, 1911,[1] these rates are reduced to 12, 8 and 4 cents per kw. hr. respectively. The rate established for commercial power is 50 cents net per active horse-power capacity per month, plus 4 cents net per kw. hr., with a minimum bill of $1.50 per month. The large amount of attention given to the classification of consumers with reference to their active connected load is noteworthy. Other parts of the rate schedule are not of especial interest here. Rates prescribed in the Menominee and Marinette case have the same general character.

More recent opinions of the Commission do not appear to develop further the principles discussed, but rather to apply those of the opinions already cited. The case of the Durand Light and Power Company as applicant for authority to increase rates[2] (decided February 3, 1911) is of interest because the power comes from hydraulic prime-movers. The schedule petitioned for and authorized was 15 cents per active lamp per month, plus 4 cents per kw. hr., with a minimum monthly charge of 75 cents per consumer.

The failure of the Wisconsin Commission to take the diversity factor explicitly into account in its rate schedules may be due to practical considerations relating to the difficulty or expense of determining the time of the peak of the individual consumer. It may be true, too, that the most important branch of the business of these Wisconsin companies is domestic lighting or has a load curve of the same character. Similarly, practical considerations doubtless determine the Commission's course in basing the computation of capacity charges upon the consumer's installation or connected load, varying percentages of which are treated as "active" according to the classification of consumers.

[1] 7 W. R. C. R. 152.

[2] 6 W. R. C. R. 334.

This identification of "demand" with "active" connected load is a common practice, but not one with which engineers and others are entirely satisfied, for it tends to restrict so-called "convenience" lighting. A more important objection in the mind of the writer is that by means of arbitrary definitions of active connected load concessions having no foundation in the avowed rate-determining principles may be surreptitiously conceded to large consumers with special bargaining power.

The "consumer" charge obtains incidental and indirect recognition in the Wisconsin electrical rate schedules in the form of the minimum monthly bill. This practice is almost universal among electrical companies, and is certainly not open to objection in principle, however annoying it may seem to a public that is prejudiced against any other than a uniform charge per unit consumed. In the Manitowoc Gas Case [1] (decided December 17, 1908), the Commission sanctioned a rate system proposed by the company which involved a meter charge of 25 cents per month, with an additional charge per M cu. ft. for gas consumed.

The Wisconsin Commission seems in general not to take cognizance of the indeterminateness of the specific incidence of overhead costs. In its reasoning upon the facts it seems to assume that fixed charges should be apportioned uniformly and according to some average, instead of differentially and according to general principles of economy and public welfare. The tendency is noticeable also in its railroad decisions. The frequency with which the Commission has to deal with compound utilities, one corporation, for example, often supplying electricity, gas and water, gives to apportionment questions more than usual importance. Apportionment of fixed charges is frequently an urgent practical need. But the serviceability of a rule of apportionment does not make it equivalent to a principle determining separable costs. Accountants and engineers are too likely to fail to make enough of the distinction between actually separable costs and schematically apportioned

[1] 3 W. R. C. R. 163.

joint costs. Nor do they perceive the gradations between these extremes.

The conspicuous merit of these Wisconsin opinions and decisions is that they squarely face the issue of differentiation in electrical rates (as also in gas and water rates) and attempt to get at underlying principles properly determining why different classes of consumers may be charged different rates. The same cannot be said of all regulative bodies. If the Wisconsin Commission's work, which in this sense is of pioneer character, is not beyond criticism as regards its theoretical implications, that is a small matter. As has been indicated, the view of the writer is that fixed charges should not be apportioned absolutely according to some scheme for dividing joint costs but should be treated differentially according to general economic and moral principles. Among the economic principles in question, regard for load and diversity factors is of great, perhaps of dominant, tho not of exclusive, importance. These factors are to be used, not as mathematical rules, but as guides of commercial policy.

G. P. WATKINS.

RAILWAY RATES AND JOINT COST ONCE MORE

IN his recent volume on *Wealth and Welfare*[1] Professor Pigou dissents from the widely accepted view that the adjustment of railway rates is explicable largely on the principle of joint supply. As he has referred to me as sponsor for the current view, I state why he seems to me not to have proved his case.

Two questions are presented: one, how far there is in fact joint supply for railway services; the other, whether the services, if so supplied, are or are not homogeneous.

[1] A. C. Pigou, Wealth and Welfare, London and New York: MacMillan, 1912. See chapter xii, The Special Case of Railway Rates.

1. On the first question, I am glad to find myself, at least in part, agreeing with Professor Pigou. He says that "the supply of transport from A to B and of transport from B to C are not joint to any appreciable degree." True, — assuming that the distances A–B and B–C are such as to make good units for operation. If the distances from A to B, and then from B to C, are small, the expenses of operation will be largely joint. But if the stretches are large enough, — if B is a "division point," — each has in the main its own expenses of operation as well as its own road-bed and other plant; and the element of joint cost is small. Nor has it been maintained, so far as I know, that the principle bears on such cases. And for the very reason that it does not, the questions of "local" discrimination are different from those of classification. Classification (whether of passengers or freight) is the one special phenomenon explained, and doubtless to be justified, on the ground of joint cost. Rates made without regard to distance, or varying inversely to distance (the larger rate on the shorter haul), are not ordinarily so to be explained or justified. Some more or less vague conviction, that the two cases, — distance rates and classified rates, — are different, accounts for the greater stringency of legislative and administrative regulation for distance rates.[1]

There is an intermediate case, however, where even distance rates may give scope for the principle of joint cost: the case, namely, where some goods are carried from A to B, and others are carried from A to B *en route* to C. If the local traffic, from A to B only, does not fully utilize the road-bed, and perhaps does not even fully utilize the minimum of traction and signalling, there is a case of joint cost.[2] As regards this case, which leads to the long and short haul problem, I am not convinced that Professor Pigou has been successful, in the later parts of his chapter,[3] in controverting the reasoning of President Hadley.

[1] No doubt the rivalry between cities and producing districts serves also to account for the large part played by this sort of regulation.

[2] See what has been said by Mr. M. O. Lorenz, in this Journal, vol. xxi, pp. 283–298, especially pp. 285 seq.

[3] Wealth and Welfare, p. 228.

But it is to the comparatively simple case of the transport of different commodities over one stretch, — from A to B, — that the reasoning in question chiefly applies. Here, it seems to me, there is in fact joint cost. Professor Pigou admits that such is the fact in one conspicuous case, — that of back loading. Now, in back loading as in other cases where "discriminating" rates are made, it cannot be said that a railroad "*necessarily*" (I follow Professor Pigou's example in italicizing the word) puts on the market a supply of one kind of service when it supplies another kind. There are always some separable expenses; and these set the minimum charge for the particular service. For example, in the case of back loading, there are the terminal expenses and the extra cost of hauling a loaded train over that of an empty one. A railroad does not necessarily put freight into its empty return cars. Similarly, it does not necessarily supply passenger carriage when it supplies freight carriage, or coal transport by the same act with copper transport. The ground for declaring these different sorts of services to be put on the market as a joint supply, is that the greater part of the total expenses are joint, and that a railway must offer all the services in order to make its investment worth while. If a railway's entire plant could be worked to the full for one kind of traffic only, — as with a logging road in our American lumber regions, or a road which carried coal only,[1] — the principle of joint cost would have no application. To repeat, it is the phenomenon of classification, universal in railway practice, which is the salient consequence of the joint cost of railway service; and this results from the fact that a railway, to utilize its full capacity, must ordinarily provide various sorts of transport over one stretch, — from A to B, — and that for these its expenses *are* joint.

2. The second question is best presented by quoting from Professor Pigou's pages:

[1] An approach to this situation appears in the recently constructed Virginian Railway, which runs from the coal fields of West Virginia to tide-water on Chesapeake Bay, and of whose traffic eighty per cent is coal.

"Professor Taussig himself admits that the use of a very large fixed plant *for varied purposes*[1] is essential to the operation of joint cost. He states in express terms: 'Where a large plant is used for producing one homogeneous commodity, — say steel rails or plain cotton cloth, — the peculiar effects of joint cost cannot, of course, appear.' A sufficient answer to his thesis, therefore, is to observe that the carriage of tons of different things from A to B *is* a single homogeneous commodity, on precisely the same footing as plain cotton cloth. The fact that some 'carrying of tons' is sold to copper merchants and some to coal merchants does not imply that two different services are being provided, any more than the fact that some plain cotton cloth is sold in England and some is sold abroad implies that two different commodities are being provided. . . . The popular acceptance of the contrary view can only be due to the fact that we happen to speak of 'transport of copper' and 'transport of coal,' instead of speaking of transport sold to copper merchants and transport sold to coal merchants. An accident of language has caused an important field of economic inquiry to be dominated by a doctrine which is essentially unsound."[2]

Is it possible that an accident of language has misled Professor Pigou? True, railways always supply "transport," or (to use another phrase that sometimes crops up in the text-books) "place utility." In this sense they supply a single sort of thing, or a homogeneous commodity. But I submit that they do not supply commodities or services which are homogeneous in the sense important for the purpose in hand, — namely, as regards the *conditions of demand*. To illustrate: the different grades of beef, — tenderloin, sirloin, rump, round, flank (I use the American terms), — are all "beef," and in this sense are homogeneous. But they have differing demand schedules, and for that reason present the peculiarities resulting from joint supply. If

[1] The italics again are Professor Pigou's.

[2] Wealth and Welfare, pp. 216, 217.

all had the same demand schedule, then and then only would they be homogeneous commodities for the purposes of the reasoning here under consideration. So as regards cotton fibre and cotton seed (the most striking case of joint supply I know): the reason why their prices are differently influenced by an increase of supply is that the demand curve for seed is different from that for fibre; it starts (doubtless) at a lower point and has a different inclination. The same test is to be applied to railway transport; and when it is applied, can a doubt arise that the services *are* of varied sorts? To refer to Professor Pigou's own illustration, the demand schedule for the transport of copper is very different from that for the transport of coal. Copper has large value for small bulk, and copper can "stand" a rate which would be prohibitory on coal. Professor Pigou himself, in the later parts of his discussion, repeatedly refers to the differences in demand prices for different sorts of transportation.[1] This seems to grant the essential thing.

Let me illustrate further by referring to another case adduced by Professor Pigou. His argument, he explains,[2] is not applicable to the case of "one sort of thing produced at two different times . . . as electricity furnished by day for power and electricity furnished by night for light"; which "may reasonably be regarded as jointly supplied." True, they may be reasonably so regarded. Here again we have two commodities which may be said in one sense to be homogeneous, or of one sort: it is electricity that is supplied in both cases. The reason why the principle of joint cost serves to explain differences in price is that electricity for power by day cannot be disposed of, unit for unit, at as high a price as electricity for light by night. The demand schedules for the two are different; in this

[1] Thus at page 223, the demands of the rich for passenger transport are said to have demand prices higher than the demands of the poor, — hence higher rates for first-class passengers; at page 224, the demands for the transportation of more valuable goods are said to have demand prices higher than those of goods less valuable, — hence freight classification on the basis of the value of the commodities.

[2] Note. p. 217.

essential regard, they are not homogeneous. Given this difference, and we have the conditions for applying the theory of joint supply. As it happens, railway freight and passenger service are jointly supplied, on British lines and on some American lines, under nearly the same conditions as electricity in the case adduced by Professor Pigou: the freight trains run chiefly in the night, and the passenger trains chiefly by day.

Professor Pigou believes that railway rates are discriminating in the stricter economic sense of the word: that they are the result (preponderantly) of monopoly, and of the monopolistic policy of charging various strata of consumers different prices for essentially the same service. If this were the case, we should expect railways to secure a large monopoly revenue. No one set of consumers would then get the service at less than specific cost (Professor Pigou's contention being that the service is homogeneous and the element of joint cost negligible); while those who paid the higher discriminating price would contribute handsomely to monopoly revenue. Hence, to repeat, — in view of the great range of variation in railway rates, — monopoly revenue would be large. In fact, however, railways by no means necessarily yield returns such as to indicate a monopoly revenue. They do not yield such returns in Great Britain; and yet the phenomena of supposed discrimination are no less conspicuous there than in countries where the profits are higher, and where there may be monopoly revenue. I doubt whether in the United States, if account were taken of the risks and failures, and the unusual tasks of management, there would be found on the whole a considerable monopoly revenue. At all events, on railways that are not highly profitable as well as on those that are, we find everywhere the same complexity and apparent discrimination in railway rates.

Is it possible that here again a verbal accident has proved misleading? We speak of railways and the like industries as "monopolies." Yet they are far from being industries to which the strict theory of monopoly price can be applied.

Professor Pigou implies, — he fairly states, — that a railway discriminates in such way as to make "the aggregate advantages as large as possible" (p. 222); that it adopts "the most advantageous system, — from the company's point of view" (p. 223). This seems to me an error. All such industries are greatly restricted from adopting the policy of greatest aggregate advantage. They are restricted by habit and tradition, still more by public opinion and by public regulation or the fear of it. An acute thinker, like Professor Pigou, trained in the mathematical school, is tempted to apply the well-rounded theory of monopoly price to any industry which has some monopoly characteristics; forgetting that it may be far from able to exploit the monopoly unrelentingly. Complete, or nearly complete, cases of fully developed monopoly value are rare. In railways, we find a much restricted monopoly conducted under the conditions of joint cost. It is this latter factor, not monopoly, which I still believe to explain most of the so-called discriminations in railway rates.

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APPENDIX

A COMPENSATED DOLLAR

APPENDIX I

SPECULATION IN GOLD

In the text it has been shown that there should be a slight margin between the two Government prices to protect the Government from speculation in gold. It has perhaps already been made clear enough that if there is a brassage charge of 1% and if it is the law that the Government cannot shift its price by more than 1% at a time, then there can be no speculation as between two dates immediately preceding and following a change of the Government prices; but it may nevertheless be worth while to illustrate by figures the importance and effect of this restriction. Suppose that, at some particular time, the weight of the virtual dollar or redemption-bullion were 38.7 grains (and of the mint-bullion 1% more, or 39.087 grains). Evidently if the virtual dollar were permitted to be raised by more than 1%, if, *e. g.*, the shift were from a virtual dollar of 38.7 grains to one of 40 grains, — so that (the brassage being 1% or .40) the mint-bullion would be 40.40 instead of 39.087 grains as it was before, — the Government might be embarrassed by speculation. The new pair of figures (40 and 40.40) would then *both* be above the range of the old pair (38.7 and 39.087); that is, the lower (40) of the new pair would be higher than the higher (39.087) of the old pair. When it became known or expected that these changes were to be made on a certain date, speculators could hurry bullion to the mint in advance of that date and for each 39.087 grains receive a gold dollar. With this dollar they could, as soon as the set date arrived, return and demand redemption in 40 grains. Thus they would win almost overnight 40 — 39.087, or .913 grains on each 39.087 grains originally held. The profits of the speculators would mean losses to the Government. Similarly if, in the opposite direction, the redemption-bullion were shifted too far, as, say, from 38.7 to 37 grains, owners of gold coin could get it redeemed in bullion at the old rate today and then mint this bullion at the new rate tomorrow. Each gold dollar could be redeemed today in 38.7 grains of gold bullion and tomorrow, under the new arrangement, gotten back from the mint for only 37.37 grains (37 grains plus 1% brassage), still leaving 38.7 — 37.37 grains or .33 grains of bullion for overnight profit on each original dollar

invested in the speculation. This profit would come out of the Government. Moreover this last form of speculation would threaten to deplete for the time the Government reserve or even to use it up entirely. If, however, the permissible shift in weight of the bullion dollar were not over 1% in either direction, no such profit would be possible.

In terms of gold prices this limitation on each shift means that the redemption-price (as well as the mint-price) shall never be permitted to shift at any one time by more than the brassage margin of, say, 1%. Thus, if the redemption-price is $12.40 and the mint-price, $12.28, this pair of prices may be changed upward to $12.41 and $12.29 respectively or to $12.50 and $12.38 respectively, but not further than $12.52 and $12.40 respectively. The lowest ($12.40) of the new pair of prices would then be no higher than the highest ($12.40) of the old pair. There would clearly be no profit in buying bullion of the Government today (at today's redemption-price of $12.40) and selling it back tomorrow (at tomorrow's mint-price of $12.40). Likewise the present prices, $12.40 and $12.28, may be changed downward to $12.39 and $12.27, respectively, but if they were depressed beyond $12.28 and $12.16, respectively, there would be a profit in selling bullion to the Government today at today's mint-price, $12.28, and buying it back tomorrow at tomorrow's redemption-price lower than $12.28.

The restriction in the shift to 1% at a time is ample to permit of all the movement ordinarily required, provided the shift is made often enough. It might be monthly or 12% per annum; it might be bimonthly or 6% per annum; it might be quarterly or 4% per annum. Moreover the margin for each shift instead of being 1% may be easily narrowed or widened by making the brassage ½% or less or 1½% or more.

As implied in the text, however, it might be advisable to limit somewhat narrowly the possible *reduction* in weight of the bullion dollar (*i.e., increase* in price of bullion) so as to prevent the possibility of speculating for a rise in the price of bullion over a period covering two or more shifts. For instance, if a great latitude were allowed, say 2% per month, it is conceivable (tho improbable) that the redemption-bullion should shrink as much as 2% in each of two successive months — *i. e.*, that the prices of bullion should rise 2% for two successive months. Then any holder of bullion could (if he should have been bold enough to risk the speculation) make a profit of 2% in a little over one month by first buying bullion of the Government and then reselling it to the Government after *holding it over the second shift*. Thus suppose the pair of prices should step up as fast as the 2% brassage permits, viz., as follows: —

	July	August	September
Redemption-Price	$12.40	$12.65	$12.90
Mint-Price	$12.15	$12.40	$12.65

Evidently a speculator might buy bullion of the Government at $12.40 any time in July and sell it back to the Government at $12.65 in September after the lapse of only a trifle over a month. He would not be likely to do this, for he could have no assurance in July of what the prices would be in September so that ordinarily such speculation would be too risky to be attractive. But let us grant for the moment that at certain times such successive jumps upward of 2% per month might be looked forward to with sufficient confidence to tempt speculators to try to make 2% a month or at the rate of 24% per year. If this were true and such speculation were sufficiently large in volume it might be embarrassing to the Government by greatly reducing its reserve in the interval between July and September. It might, therefore, be advisable to make such speculation impossible by a narrower latitude. To effect this, the only restriction necessary is that *the rise should never exceed the minimum rate of interest on risky short time investments.* Such a rate is, of course, more than the rate on safe short time investments. Thus if 1% per quarter be deemed an inadequate latitude, it might readily be ⅓% a month or at the rate of 6% per annum, or even ¼% per month or at the rate of 9% per annum. No similar precaution need be taken against the opposite form of speculation — for a fall in the price of bullion. Such speculation would not injure the Government reserve, but rather strengthen it by the temporary addition of stocks of bullion which dealers can spare for a time and so sell to the Government at present high prices to buy back some time later at lower prices. Moreover it could be shown that such speculation, besides being harmless, would be unimportant, for the reason that the stock of gold bullion outside the Government vaults available for such operations is never likely to be large.

A distinction could therefore be made between the latitude allowed in the two directions. Thus if the brassage were 1% and the readjustment of the Government prices took place every month, we might especially restrict the upward movement of prices to 1% every three months, or 4% per year, while permitting a downward movement of 1% per month, or 12% per year.

It should be noted that there would still be a chance to speculate in gold in the market in a way not injurious to the Government. The market price of gold bullion may, as we have seen, be equal to the Government mint-price, or to the Government redemption-price, or to any figure between these two. Suppose that, during the first part of a particular quarter of a year, the market price were as low as possible, *i. e.*, were equal to the mint-price say $12.28 per ounce. Later it might be known or expected that the Government prices would be raised at the end of the quarter so that the mint-price would be $12.35, and consequently the market price *at least* $12.35. Evidently the market price, being now $12.28, will have to rise *at least* 7 cents by the end of the quarter, and speculators, foreseeing this, might buy in the

open market at $12.28 and sell later at $12.35 or higher. (They could not, of course, buy of the Government because the Government sells at 1% more than $12.28.) The result of such speculation would merely be a lull in minting gold toward the end of any quarter when a rise of price was expected and a gradual instead of a sudden rise in the market price. The opposite speculation for a fall might occur if the market price were at first equal to the redemption-price and a fall in Government prices were expected. Then there would be a lull in redemption at the end of the quarter and the fall of market prices would be gradual instead of sudden. These operations are entirely analogous to those connected with fluctuations in the foreign exchanges.

The limitations on the adjustment of the virtual dollar, etc., imposed for the purpose of preventing embarrassing speculation will, as we have seen, impair slightly the power of the adjustment to compensate for changes in the purchasing power of gold; yet a study of the actual movements of prices shows that it would easily be possible to avoid absolutely any possibility of embarrassing speculation and still permit, in all ordinary cases, the freedom of adjustment necessary to produce the desired regulation. If not, *i. e.*, if changes in prices are impending in the future so enormous that the system could not fully cope with them, there is all the greater need for adopting the system as a means of reducing these enormous fluctuations to a minimum!

APPENDIX II

ILLUSTRATIVE CALCULATIONS FOR 1896–1911

We may best picture how the plan would work by illustrating its various phases through numerical examples. Recent experience (since 1896) supplies a very severe test, while limiting the adjustment of the bullion dollar to 1% per quarter makes the test still more severe.

Taking the index numbers of the Bureau of Labor and changing them by simple proportion so that the price level of 1896 shall be 100%, let us consider what would have happened if on January 1, 1897, the system here described had been adopted. We assume that the weight of the coin dollar would have been left, as it is, at 25.8 grains. The index number for January,[1] 1897, was 1.5% below the par of 1896. Therefore, if the system here proposed had been in operation, it would have been impossible to have lowered the weight of the redemption-bullion; it was already at the minimum allowed, 25.8 grains. The new

[1] The Bureau of Labor has published statistics giving the index number for each month beginning with 1900. Its previous index numbers are by years and not by months. The quarterly variations, 1897–99, have been calculated by means of the quarterly index numbers of Professor Commons for that period.

law would simply have been a dead letter so far as affecting the price level of January, 1897, goes, — that is, if gold were flowing *out* of circulation in the United States at the time; for it would still be withdrawn (by melting coin) as freely under the new law as under the old. But if (as was actually the case) gold was flowing *into* circulation, the new brassage charge of 1% at the mint would act as an impediment to coinage. We shall assume that the mintage of gold would have continued in spite of the brassage. The mint-price would therefore have ruled the market so that the price of gold would have fallen 1% and the price level of commodities would have tended to fall the same 1%.

This depression of 1% below what were the actual prices would have been the only result until October, 1897, when there would have occurred the first opportunity to change the redemption-bullion; for at that date the index number was for the first time above par, viz. 104, and under the new system it would have been 1% less than this, or 103. This shows a deviation of 3% above par, which would have been the signal for raising the weight of the redemption-bullion. But it could not have been raised by the full 3%, but only by the maximum permitted, 1%. Consequently as soon as the necessary market reports could be gathered and the index number for October 1, 1897, calculated (say in a week or two) the redemption-bullion would have been raised in weight by 1% in order to press the rising price level back 1%. Let us assume that this effect would have been fully felt by the beginning of the next quarter, January 1, 1898. By that time, however, the downward effect of the heavier dollar would have been more than neutralized by those other forces which actually caused prices to rise by 1.1%. This historical rise occurred, of course, while the dollar remained unchanged. Evidently if the adjustable seigniorage system had been in operation, 1% of this rise would have been prevented. That is, the price level, instead of rising 1.1%, would have risen only .1%, and the index number for January 1, 1898, would therefore have been 103.1. We may put these calculations in the following form: The index number for October 1897 (103), *minus* the depression which the heavier dollar would have caused (1%), *plus* the rise actually experienced by January, 1898 (1.1%), equals the index number (103.1) which would have been found January, 1898. In short, $(103-1.0+1.1) = 103.1$.

The same kind of formula applies to the next quarter. The deviation above par of January, 1898 (3.1%) would have served as the signal for another increase of 1% in the weight of the redemption-bullion; but in the next quarter prices actually rose 3.2%, so that the price level in April, 1898, would have been $(103.1-1.0+3.2) = 105.3$. This shows a deviation above par of 5.3, and would entail a further increase of 1% in the redemption-bullion, which would have pulled down the price level 1% more than it actually did go down (7.1%). The index number for July, 1898, would then have been $(105.3-1.0-7.1) = 97.2$. This shows a deviation of 2.8 per cent *below* par which would therefore

have been the signal for reducing the redemption-bullion, tho we are assuming it could not have been reduced by 2.8%, but only by 1%. This change would have tended to raise the price level 1% in the next quarter, during which it actually fell 2.2%. Thus there would have been a net fall of 1.2%. The index number for October, 1898, would then have been (97.2+1.0−2.2) = 96.0. The next five quarters show an unprecedented rise of prices which a mere adjustment of 1% each quarter could only have feebly checked.

In all cases so far considered the change in the redemption-bullion was the full maximum of 1%. This full 1% appears in most of the cases owing to the smallness of this margin and the fact that changes can occur only once a quarter. But in October, 1904, the index number was 99.2, which is only .8% below par. In this case, therefore, the redemption-bullion would have had to be reduced only .8%, which would have exactly offset the deviation. Consequently at the end of the next quarter the index number would have deviated from par only by the change occurring in the quarter, which was 2.0%; *i. e.*, (99.2 +.8+2.0) = 102.0.

Part of the series thus calculated is given in the text together with the index numbers of prices as they actually were in the same period, and the weight of the redemption-bullion as it would have been, had it been increased 1% October, 1897, and varied subsequently as required by the rules laid down.

We have assumed that gold continues to flow into the circulation, or that the mint price always rules the market. If, at any time, the market should be such as to require the redemption of gold coin, the price level would be 1% higher than otherwise. It might of course happen that the market would temporarily be intermediate between the two official prices and the price level vary by that amount from what it would otherwise be.

If more latitude be allowed in the changes in the redemption-bullion, say a brassage[1] of 3% (an allowed increase in weight of this amount each quarter and a decrease limited to 1%), we should be just as secure against embarrassing speculation and the results would be a much closer approximation to par. Beginning with October, 1897, when the increase in weight of the bullion dollar is first indicated, the results in part would be as follows: —

	1896	.....100.0
October	1897	.....101.0
January	1898	(101.0−1.0+1.1) = 101.1
April	"	(101.1−1.1+3.2) = 103.2
July	"	(103.2−3.0−7.1) = 93.1
October	"	(93.1+1.0−2.2) = 91.9
January	1899	(91.9+1.0+5.5) = 98.4

[1] Or, better, the brassage might be 1%, but *increases* in weight of the bullion dollar of 1% be allowed monthly and *decreases* of 1% per cent allowed quarterly. The results of such an arrangement would be more laborious to calculate but would not be very different from the results actually calculated.

In this series the deviations from par are in most cases slight and due to the change in the price level going on during a single quarter before a correction can be applied. This is true in 36 cases out of 56. The entire series is shown in the diagram.

I have also gone to the trouble of calculating a third set of figures *by months*, beginning January, 1904 (and therefore including the most violent convulsions of the price level which have been experienced). In this third set of calculations the par is the price level of December, 1903, the brassage 1½%, the maximum increase allowable in weight of the redemption-bullion, 1½% per month, and the maximum decrease allowable, ½%. The results shown are much closer approximation to par even than in the second set of calculations. Only 7 times out of 96 does the index number vary by more than 1% above par and only 20 times by more than 1% below par. That is, in 69 cases out of 96 the index number kept within 1% of par. In only 7 cases was it necessary to increase the weight of the redemption-bullion by the full 1½% allowable and in only 23 cases was it necessary to reduce that weight by the full ½%. In other words, in 66 out of 96 cases the limitations on the adjustment were not called into play. As has been explained in the text, even the few cases where the correction applied was slightly hampered (by the limitations imposed to prevent speculation) would not all have existed (perhaps none of them) if the system were in actual operation. The reason is because there would not then have been the price-convulsions which we now suffer, and which are due to the alternation of accumulated upward booms and downward reactions therefrom, which feed on themselves, so to speak.

I will not encumber these pages by giving the details of this laborious calculation, but confine myself to a few illustrative cases.

Assuming December, 1903, as the base for which the price level was taken, or 100%, the level for January, 1904, was actually 101.3 and would have been the same under the system proposed if we could assume that the redemption-price were the ruling price of gold. But we assume, as before, that the mint-price was the ruling price and as this has been lowered 1½% (by the establishment of the brassage charge, which we will suppose was imposed in December, 1903) the level of prices would have been depressed by 1½% below what it would otherwise have been (viz. 101.3) so that it would have been 99.8. This deviates from par by .2% which, being negative, would ordinarily be the signal for a fall in the redemption-bullion; but not in this case, because the redemption-bullion is already at the lowest point permissible (25.8 grains). Consequently the system would not operate and the price level in February, 1904 would have risen exactly as much as it did rise, namely 1.1% which would have raised it from 99.8 to 100.9. The *positive* deviation .9% now serves as signal for an increase in the virtual dollar by that amount (thus raising it from 25.8 grains to 26.03

grains) and tends to depress the price level by the same percentage. Assuming that this effect would have been fully felt before the next adjustment, it would have been blended with the actual rise of prices in that time which was .2%, making for March, 1904, the index number (100.9−.9+.2) = 100.2. We, therefore, next increase the weight of the virtual dollar by .2% for April, 1904, which becomes 26.08 grains and the index number becomes (100.20−.20−.52) = 99.48. This shows a deviation *below* par of .52%, but under the limitations imposed we can only take off .50 from the weight of the virtual dollar. This brings it to 25.95 grains and the index number for May becomes (99.48 +.50−.70) = 99.28. The deviation here indicated of .72% below par is the signal for another full reduction in the virtual dollar of .50% so that it becomes 25.82 grains and the next index number (99.28+.50− .27) =99.51. The deviation here indicated of .49% below par would ordinarily produce a reduction in the weight of the virtual dollar of that amount. But as its weight is already down to 25.82 grains, and can never sink below 25.80, it can only be reduced to this extent, or .08%. Consequently in June the virtual dollar is again 25.8 grains and the index number (99.51+.08−.80) = 98.79. After this date the virtual dollar remains 25.8 grains for several months and the price level drifts unguided. During this period, the index number remains below par, reaching its lowest point (98.61) in October, 1904. It rises above par again in December, 1904, becoming 100.11, thus signalising an addition of .11% to the virtual dollar, which accordingly in that month is raised from 25.80 to 25.83 grains. Thereafter it never again sinks to 25.8 throughout the period to the present.

Nothing more requiring explanation occurs until December, 1906.

In November, 1906, the index number is 101.80 under the system (as contrasted with 112.5 without it). For each of the six preceding months the calculations show a steady tho small increase in the weight of the virtual dollar. The deviation above par of 1.80% for November, 1906, requires a further increase (viz. 1.50%, the maximum allowable). This increases the redemption-bullion from 28.06 grains to 28.48 grains. In view of this great increase following after a previous steady increase, this seems a good place at which to suppose the added seigniorage to shut off minting entirely. The mint-price would then cease to rule the market and (we shall suppose) a market price is fixed midway between the mint-price and the redemption-price. The result is that tho the correction of 1.50% in the virtual dollar tends to depress the price level by 1.50%, it is restrained from so doing by .75%. Since prices actually rose 1.50% in the next month, the next index number (for December, 1906) becomes (101.80−1.50+1.50+.75) =102.55. The deviation above par of 2.55% is the signal for a further increase in the redemption-bullion, which accordingly increases from 28.48 grains to 28.91 grains. But we shall now suppose that this further increase in the virtual dollar brings the market price of bullion up to the redemption-

price. In other words, we are assuming that the mint-price which formerly ruled gave way in two months to the redemption-price, the market price in the midway period being midway between the two Government prices. The consequence is that the shift in the redemption-bullion is only half effective in each of these two cases, because the bullion to which the actual dollar is equivalent instead of being, as formerly, the mint-bullion, falls, first half way, then fully to the redemption-bullion. The next index number (for January, 1907) is (102.55 −1.50+.20+.75) = 102.00. We now suppose the redemption-price to rule until May, 1907. (In the meantime the index number gets adjusted to the new ruling redemption price and returns closer to par, being successively 101.40, 100.20, and 97.77.) In May, 1907, we shall suppose that the redemption-price in turn ceases to rule and the market price is found first midway between the two government prices and then at the mint-price again. Thus the index number for May, 1907, becomes (99.77+.23+.40−.75) = 99.65, and for June, 1907, it becomes (99.65+.35+.40−.75) = 95.65.

These divergencies of the market price from the mint-price are supposed merely for the purpose of illustrating how the system would work when they occur. It is clear that the system would work less effectively while the market price swings from one limit to the other. Yet if the market price keeps for several months in coincidence with *either* the mint-price *or* the redemption-price, the system works equally well. Only during the transition is the result to aggravate any existing deviation from par and then only by the extent to which the market price has moved away from its accustomed limit, whether this was the mint-price or the redemption-price. In general, as has been previously remarked, the mint-price will rule because, with the constant growth of trade, there is usually need of more gold to be minted to keep up the level of prices. Hence we need not expect the "wabbling," so to speak, of the market price away from the mint-price and back again to occur very often. Even when it does occur the result is not at all serious, as the following comparisons for the above named period show: —

Date	Index Number	
	Mint-price ruling	Market price "wabbling" as specified
November 1906.....	101.80	101.80
December "	101.80	102.55
January 1907	100.50	102.00
February "	100.90	101.40
March "	100.30	100.20
April "	99.77	99.77
May "	100.40	99.65
June "	100.40	99.65
July "	100.20	100.20

The figures show very little aggravation of the deviations from par. That is, the second column varies from par only slightly more than the

first. The figures for the index numbers and the weight of the virtual dollar in this third set of calculations have been summarized in the text.

We have assumed throughout that only the United States adopted the plan so that the effect on the price level of changing the weight of the bullion dollar would be approximately equal to its change in weight. But the stabilising effect would be nearly as great even if the whole world adopted the plan and this full assumed effect were not felt (as explained in Appendix III). As stated in Appendix III, it might, however, be advisable to shift the weight by a percentage one-half larger than the percentage by which the price level deviates from par, subject, of course, to the usual restrictions.

It is clear that the proposed system, if not perfect, certainly tends strongly to bring the index number back toward par or to restrain its movements from par, and that if properly planned as to frequency of application and freedom of movement, it could always maintain substantial constancy of the purchasing power of the dollar or, in other words, of the level of prices.

APPENDIX III

THE EFFECT ON THE VALUE OF GOLD BULLION OF CHANGES IN THE WEIGHT OF THE VIRTUAL DOLLAR

For simplicity we have hitherto assumed that an increase of 1% in the weight of the dollar would, ultimately at least, increase its purchasing power 1%. But this is not quite true; for the effort to pry up the dollar on a fulcrum of gold bullion reacts on and depresses the bullion itself. Using gold bullion as a fulcrum adds a further depreciation to that which it had already. We cannot even pry up a stone without infinitesimally depressing the earth. If the stone were big enough, the earth would be moved as far as the stone. A better simile is found by supposing two canal boats or rafts, "money" and "bullion," drifting freely in a canal, one ahead of the other, and free to move only longitudinally, *i. e.*, along the canal. The problem is to keep the money raft opposite a fixed point on the shore (commodities) by adjusting a pole connecting it rigidly with the bullion raft. If, by observing the shore, it is found that the rafts have, while thus linked together, drifted a foot, the pole between the rafts must then be lengthened or shortened a foot in the hope of bringing the money raft back where it belongs. If the money raft is small and the bullion raft large, an adjustment of a foot in the pole will move the small money raft almost a full foot. The next periodical reading of the index number showing the position of the mark on the shore and the consequent adjustment of the rod will help further. But the pull or push of the rod

will always move the bullion raft *somewhat*, altho a prompter and more perfect adjustment of the money raft might be secured if the rod were lengthened or shortened by more than the foot which the reading indicated.

To apply these ideas let us suppose that the United States, and the United States only, had first adopted the proposed scheme in 1896 and so had gradually raised the weight of the bullion dollar until the present time. As a consequence, the purchasing power of the American dollar would be in 1912 about the same as it was in 1896. This means that it would be about 50% higher than it actually is at present. The question here raised is, would the *weight* of the bullion dollar also have grown by just 50%? The answer is that it would not have grown by just 50% but by a larger amount, unless we could assume (and we cannot) that each grain of gold today would have possessed exactly the same purchasing power under the proposed system as it actually does possess today without any such influence having intervened. We may see this by following in imagination the operation of the system in the years 1896–1911. As prices rose and the mint-price was reduced, evidently the first effect of the lower mint-price would have been to discourage minting gold in America. Instead, American holders of bullion would have shipped it to the London mint (and other foreign mints not employing the adjustable seigniorage system) where the mint-price would have been as high as ever, and sell exchange against it. In this way they would have secured more American money than by direct selling to American mints.

But the very operation by which they attempted to profit would soon correct itself. It would lower the rate of exchange on London until there would be no longer any profit in sending gold from the United States to England and selling exchange against it. When this happened it would be as profitable to sell gold to American mints as to ship it abroad, and a new par of exchange would be established corresponding to the new weight of the American dollar.

But in the process described much of the gold which has actually been minted in the United States since 1896 would, if the adjustable seigniorage had been employed in the United States, have been diverted into foreign countries or into the arts. So vast is the world, however, that this dumping a few millions of gold on Europe would scarcely affect its value. If we could assume that it would have had practically *no* effect on its value, then the price level outside of the United States would have been today practically just what it is. That is, the purchasing power of each grain of gold would have been just what it actually has been and (since, as we have seen, the purchasing power of the American dollar would have had to be 50% more than it is), it follows that our gold dollar would have had to be 50% heavier than it is.

If, however, the diversion of gold from the American currency to foreign currencies and the arts should cause a depreciation of, say, 3%

in the value of gold bullion, it is evident that the weight of the American gold dollar, instead of being only 50% greater, would have had to be 3% more than this, or 54½% greater, in order to have had 50% more purchasing power; and the system of compensating the dollar according to index numbers would have afforded this needed correction.

Now if not one country only but all countries should have adopted the adjustable seigniorage plan, the reaction or repercussion on the value of bullion would have been much greater. Yet even if, because of the repercussion, each increase in weight of the bullion dollar of 1% should add only ½% to its purchasing power, the steadying effect on the purchasing power of the dollar would be surprisingly effective. Suppose, for example, that the price level *without the operation of the system* tends to rise by ½ of 1% each quarter or 2% per annum regularly. Calling the original price level 100%, the index number at the end of the first quarter would be 100+.5, or 100.5. The bullion dollar would now be increased by .5% which, according to our present supposition, would tend to lower the price level only half as much, *i. e.*, ¼ of 1%. As during the second quarter the price level tends to go up ½%, the real rise will be 100.5−.25+.5, or 100.75. Accordingly the next quarter would see an increase in the bullion dollar of .75% and the price level will be 100.75−¼ (.75) +.5, or 100.88. The next increase in the bullion dollar will be .88% and the index number will be 100.88−¼ (.88)+.5, or 100.94, and the next 100.94−¼ (.94)+.5, or 100.97, and so on. It is evident that the index number would never exceed 101, but would always be above par so long as the regular upward tendency of ½% per quarter continues. The bullion dollar would increase faster and faster, each year, yet never quite as fast as 1% at any one shift.

Again, if there were a regular upward movement of 1% per quarter instead of ½%, the index number would be at the end of the first quarter, 101. Consequently 1% would be added to the weight of the bullion dollar which would tend to reduce the price level by half that amount (.5). At the next quarter it would be 101−.5+1, or 101.5. The next shift in the weight of the bullion dollar could not be 1½% but only 1%, the greatest allowable. The effect of this being ½%, the index number becomes 101.5−.5+1, or 102. Evidently the result in this case would be a net addition of .5 to the index number every quarter. That is, prices would rise steadily, but only half as fast as without the mitigating effect of the system. Thus we see that the system would always serve to mitigate changes in the purchasing power of the dollar even if, on account of the repercussion on the purchasing price of each grain of gold, it should not be quite adequate. Any inadequacy, however, might itself be compensated for by magnifying the correction to be applied. To revert to our simile, we could, in order to correct the position of the money raft, lengthen or shorten the pole by *more* than one foot for each foot of deviation from the required position, in order to allow for the effect on the bullion raft of this shift in the pole connect-

ing the two. That is, it is not necessary that the shift in the weight of the redemption-bullion should be exactly equal to the deviation from par of the index number. It might be greater. Thus the rule might be to raise or lower the weight of the redemption-bullion by ½% for each deviation of ½% above or below par of the index number. There might be some advantage in thus making the shift somewhat greater than the deviation, provided of course it were not made too great. Evidently if the shift were *more than double* the deviation it might *over* correct the deviation so much as to produce a deviation greater than the original in the opposite direction. But if the ratio of the shift to deviation were fixed somewhere between 1 and 2, say at 1½, the result would probably be a prompter and completer adjustment than if the ratio were 1, *i. e.*, if the shift were equal to the deviation.

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